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# MILITARY REPORT

ON

## EGYPT

1937

GENERAL STAFF,  
THE WAR OFFICE,  
May, 1938.

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PREFACE

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This report has been compiled from material supplied by the General Officer Commanding, British Troops in Egypt, and officers and officials serving in the country. It is particularly requested that any errors or additions may be brought to the notice of the Director of Military Operations and Intelligence, the War Office.

This supersedes the Report issued in 1926.

H. R. POWNALL,

*Major-General,*

*Director of Military Operations and Intelligence.*

THE WAR OFFICE,

*May, 1938.*

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## CHAPTER I

### HISTORY

Introductory Remarks.

Chronology of Events—1798 to commencement of Great War.

The Great War and Egypt's War Effort.

Survey of Post-War History, Political Tendencies and Internal Disorders.

Effect of reduction of British Officials.

List of Books of Reference.

### Introductory Remarks

1. The object of this chapter is not to summarise the history of Egypt since ancient times, but to provide such information on recent wars and modern political developments as may be required by commanders and their staffs and by officers who wish to make themselves acquainted with the conditions of the country in which they are serving.

2. This chapter is therefore divided into five parts :—

A. A chronology of events since the Napoleonic invasion of 1798 to the commencement of the Great War, with some details of the principal campaigns.

B. The Great War and Egypt's War Effort.

C. A survey of post-war history, political tendencies and parties, nationalistic movements and internal disorders.

D. A note on the effect of the reduction of British Officials in Egypt.

E. A list of books of reference.

That the above may be seen in perspective, it but remains to add that Egypt, situated as it is, commanding the main trade route between east and west has throughout History attracted the conqueror and soldier of fortune. For over 2,000 years no Egyptian dynasty has ruled in the Valley of the Nile, and the unwarlike fellaheen have in turn been dominated by Persian, Greek, Roman, Arab, Mameluke and Turk.

Each invading race has degenerated in the enervating atmosphere of the country to give way to fresh and more virile successors. All in time have been absorbed by the country, leaving little mark upon the type and characteristics of its inhabitants.

**A. Chronology of Events since the Napoleonic invasion, with details of principal campaigns**

**3. 1798.** Napoleon landed in Egypt on 1st July.

**1799.** Napoleon left Egypt on 2nd August.

**1801.** The French forces capitulated in September to a British force under Sir John Hely Hutchinson and were allowed to march out of the country with the honours of war. The British forces then evacuated the country.

**1806.** Mehmet Ali (Mohammed Ali), after seizing the power in Egypt, was confirmed in his position by the Porte and created Pasha.

**1807.** Mehmet Ali defeated a British force which came to the assistance of the Mamelukes.

**1810.** Massacre of the Mamelukes by orders of Mehmet Ali in the Citadel at Cairo. Liberation of Mecca and Medina from Wahabi domination by the Egyptian Army under Ibrahim Pasha.

**1820-22.** Conquest of the Sudan by Mehmet Ali.

**1823-24.** Egyptian Army organized on European basis under French officers.

**1827.** Egyptian and Turkish fleets destroyed at the Battle of Navarino by the combined British, French and Russian fleets.

**1831.** Invasion of Syria by Ibrahim Pasha, Mehmet Ali's son, and war with Turkey.

**1834-41.** Defeat of the Turks. Intervention of the Powers. Mehmet Ali confirmed as hereditary Vali of Egypt and Nubia by the Porte.

**1847.** Commencement of the Delta Barrage.

**1848.** Death of Ibrahim Pasha.

**1849.** Death of Mehmet Ali Pasha, who was succeeded by his eldest surviving grandson, Abbas Hilmi I.

**1854.** Assassination of Abbas Hilmi. Succession of Said Pasha, his uncle.

**1854-63.** Construction of railways and telegraphs. Work started on Suez Canal. Egyptian Army neglected and reduced to 3,000 men.

**1866.** Title of Vali changed to Khedive by the Porte and the succession made direct from father to son.

**1869.** Opening and inauguration of the Suez Canal.

**1875.** The Khedive's shares (nearly 50 per cent.) in the Suez Canal Co. bought for the British Government by Disraeli.

**1876.** In consequence of the Khedive's extravagance, the Commission of the Public Debt ("Caisse de la Dette Publique") was formed and the Dual Control established. The latter consisted of two controllers (British and French) of the State finances.

**1879.** British and French Governments demand from the Porte the deposition of the Khedive, who was succeeded on 8th August by Prince Tewfik.

**1881.** Military despotism of Arabi Pasha. First appearance of the Mahdi in the Sudan.

**1882.** Growth of the Nationalist movement. Outbreak of riots culminating in the massacre of Europeans at Alexandria on 11th June. Bombardment of Alexandria by the British fleet on 11th July. Commencement of the British Occupation.

### **The Arabi Campaign**

4. Decrees were issued by the Khedive authorizing the British Government to restore order in his name.

By 19th August a British Expeditionary Force under Sir Garnet Wolseley had arrived at Alexandria. Leaving one division at Alexandria, Sir Garnet, with the remainder of his force, proceeded by sea to Port Said and thence to Ismailia, where they disembarked and where he was joined by an Indian contingent.

On 28th August an Egyptian force was routed at Qassassin, and on 13th September the Egyptian trenches at Tel-el-Kebir were stormed.

Arabi, closely pursued by General Lowe's brigade of British and Indian cavalry, fled to Cairo, where he surrendered with 10,000 men to two squadrons of British cavalry that had ridden straight from Tel-el-Kebir to the capital. The British Expeditionary Force entered Cairo on 14th September and the authority of the Khedive was formally re-established.

**1883.** Dual Control abolished. Sir Evelyn Baring (Lord Cromer) returned in September as British Consul-General. Egyptian Army disbanded and new army organized under British staff.

### **The First Sudan Campaign**

5. Hardly had the new regime commenced to evolve order out of chaos when a series of disasters occurred in the Sudan. Primary factors were the suppression of the slave trade and the military weakness of Egypt.

In 1881 a Sheikh named Mohamed Ahmed, a native of Dongola, advanced his claim to be the Mahdi, or successor of the Prophet, and acquired a considerable influence among the credulous and fanatical Arabs of Kordofan. A number of successes against Egyptian forces greatly increased his prestige and the movement made rapid headway. Tribesmen flocked in thousands to his standard. By the end of 1882 both Bara and El Obeid were besieged by the Mahdi and were in dire straits.

In January, 1883, El Obeid fell and, in April, Hick's army of 8,000 men, advancing into Kordofan, was annihilated in the dense thorn scrub at Shekan. These successes raised the prestige of the Mahdi to the highest pitch. Khartoum and Sennar were reduced to a virtual state of siege and Darfur, in spite of the gallant efforts of Slatin Bey, was entirely subjugated by the end of the year. Slatin surrendered in December, and the Mahdi established his headquarters at El Obeid in undisputed possession of the Western Sudan.

The British Government decided that the Sudan must be abandoned and General Gordon was despatched to Khartoum early in 1884 to carry out the evacuation. While Gordon was yet on his way the insurrection spread northwards. Berber fell on 20th May and Khartoum was cut off from the north.

A relief expedition of 7,000 men under Lord Wolseley was despatched from England and by December had concentrated in the Dongola Province, from which point the subsequent advance was made in two columns.

On 28th December a river column of four battalions was sent upstream from Korti under Major-General Earle with the object of reaching Abu Hamed and pushing on to Berber, whilst a desert column under Sir Herbert Stewart left Korti to occupy the Jakdul wells on the road to Metemma. On 17th January, 1885, the desert column, reinforced to a strength of 1,800 men, encountered and defeated a Dervish force of 11,000 men at Abu Klea. The Nile was reached on 19th January after another sharp action in which Sir H. Stewart was mortally wounded, and on 21st January Gordon's four steamers arrived from Khartoum. On 24th January they started back for Khartoum under Sir C. Wilson to find, when they arrived on the 28th, that the city had fallen two days before and that Gordon had been killed. The desert column retired to Abu Klea and eventually reached Korti in March, 1885.

The river column had meanwhile ascended the fourth cataract with extreme difficulty and heavily defeated the enemy near Kirbeka, though, when within 30 miles of Abu Hamed, the column was recalled and reached Merowi on 5th March.

In the Eastern Sudan, General Graham, with a British force of 2,000 men, inflicted crushing defeats upon the Mahdists at El Teb and Tamai in February and March. Graham's force was increased to 13,000 by the addition of Indian and Australian troops, and the project of marching on Berber from Suakin was mooted. A series of inconclusive actions was fought but, when a few months later the Government decided to proceed no further with the Sudan operations, General Graham's force was withdrawn concurrently with the troops of the Nile Expedition and the whole Sudan south of Kosha was abandoned to the Dervishes.

In June, 1885, the Mahdi died and was succeeded by his Khalifa, Abdullah el Taaisha. In 1886 the frontier of Egypt was withdrawn to Wadi Halfa. Early in 1888 the British force was withdrawn from the frontier and its defence entrusted to the Egyptian Army. Desultory frontier fighting continued in the neighbourhood of Wadi Halfa, but at Suakin the situation was serious and the activity of Osman Digna kept the city in a chronic state of siege till Sir Francis Grenfell, with an Anglo-Egyptian force, inflicted a severe defeat upon the Mahdists at Gemaizeh in December, 1888, securing comparative peace in that neighbourhood till 1890.

At the end of 1888 the Khalifa made preparations for the invasion of Egypt and despatched Wad el Nejumi with a force of some 4,000 fighting men to attempt the task. On reaching Argin, three miles north of Wadi Halfa on the left bank of the river, he was engaged by Colonel Wodehouse with the Egyptian Frontier Force, and suffered a loss of 1,400 men. Undeterred however by this defeat, Wad el Nejumi pushed rapidly northwards on the left bank of the Nile till, on 3rd August, 1889, he encountered Sir Francis Grenfell with six battalions, besides cavalry and artillery, of the Egyptian Army and one squadron 20th Hussars at Toski, and met his doom. Wad el Nejumi was killed and his force destroyed.

This victory finally crushed Dervish enterprise upon a large scale on the Nile frontier, while the recapture of Tokar in February, 1891, deprived Osman Digna of his base

in the neighbourhood of Suakin and restored to that district a measure of security which it had not enjoyed since the outbreak of the Mahdist movement.

**1892.** Death of Tewfik Pasha and succession of his son, Abbas Hilmi II. Appointment of Sir Herbert Kitchener as Sirdar of the Egyptian Army.

### **The Second Sudan Campaign**

6. In 1892 Dervish activity on the frontier was renewed. It was realised that so long as the Dervishes possessed a base of operations in the province of Dongola and the subsequent power to use numerous desert routes, even Egypt itself was in danger. The occupation of Dongola was decided upon as the only effective defence and General Kitchener was appointed to command the expedition. On 20th March, 1896, Akasha was captured by a Sudanese brigade, and the whole Egyptian Army, with the exception of five battalions, was concentrated for the attack on the Dervish outpost at Firket. On 7th June the Dervish garrison under the Emir Osman Azrak was surprised and completely defeated with the loss of 800 killed and 600 prisoners. The railway was pushed on as far as Kosha, which it reached on 4th August, and on August 23rd Dongola was occupied.

Preparations were now made for a further advance. The railway was completed to Kerma in May, 1897, Abu Hamed was captured on 7th August by a column under Major-General Hunter, and a fresh line of railway was constructed from Wadi Halfa to Abu Hamed across the Nubian Desert.

In September the Egyptian troops marched into Berber, where the Emir Mahmud dominated the neighbouring country. The Egyptian Army was reinforced by a British brigade which reached Berber in March, 1898, and on 8th April the Anglo-Egyptian Army routed and practically annihilated the combined forces of Mahmud and Osman Digna at the battle of Atbara.

In August, 1898, the Army, reinforced by a second brigade of British troops, the 21st Lancers and two batteries of Royal Artillery, commenced the final advance on Omdurman, where the Khalifa had concentrated his forces. Omdurman was bombarded by a flotilla of gunboats and a howitzer battery on 1st September, and on the following day the Khalifa, marching out with 70,000 men to attack the Anglo-Egyptian forces, was utterly routed on the plains of Kerreri. Omdurman was occupied on the same evening and the Khalifa with a remnant of his following fled south into Kordofan.

The British and Egyptian flags were hoisted at Khartoum and, on 10th September, the Sirdar, with five gunboats, a company of the Cameron Highlanders and an Egyptian battery, started south for Fashoda. Outlying Dervish forces were crushed during the ensuing months.

**1899.** Declaration of the Condominium in the Sudan on 19th January. Death of the Khalifa at the skirmish of Um Debreikat and final destruction of the Dervish power.

**1904.** Joint declaration by the British and French Governments defining the British position in Egypt.

**1905-06.** Rise of the Nationalist (Watani) Party in Egypt. Young Turk Movement in Turkey and Pan-Islamic Movement throughout the Moslem world.

**1907.** Resignation of Lord Cromer. Appointment of Sir Eldon Gorst as British Agent. Severe financial crisis due to over-trading and speculation. Nationalist agitation redoubled.

**1910.** Butros Pasha Ghali, the Prime Minister, assassinated by a Nationalist.

**1911.** Death of Sir Eldon Gorst and appointment of Lord Kitchener in his place. Outbreak of Italo-Turkish War.

## B. The Great War and Egypt's War Effort

**7. 1914-18.** Three months after the outbreak of the Great War in August, 1914, it became obvious that Turkey intended to throw in her lot with the Central Powers. The General Officer Commanding the British Troops in Egypt, on the instructions of the British Government, thereupon declared Martial Law (2nd November, 1914) and a rigorous censorship was imposed. The decision of the Sublime Porte to stand by Germany and Austria-Hungary gave the British Government an opportunity of clarifying its position in Egypt and placing the British Occupation on a more or less legal basis. There were three courses open to the British Government—

- (i) To maintain the *status quo* and settle up after the fighting was over.
- (ii) To take over the suzerainty over Egypt from Turkey as by right of conquest.
- (iii) To declare a Protectorate.

On the representations of the Acting British Agent, Mr. Milne Cheetham, the latter course was adopted and a Proclamation to this effect was issued on 18th December, 1914.

On the following day a Note was addressed to Prince Hussein Kamel, announcing the deposition of the absent Khedive, Abbas Hilme II, and offering the Throne to the Prince, with the title of Sultan.

8. Although in his Proclamation of Martial Law in November Sir John Maxwell specifically stated that Great Britain took upon herself "the sole burden of the present war without calling upon the Egyptian people for aid therein," three days later it was found necessary to send Egyptian artillery units to assist in the defence of the Suez Canal. By August, 1915 (that is, some eight months later), an Egyptian Labour Corps had been formed. This at first numbered only 500 men, but had reached a total of some 3,000 by the time that Gallipoli had been evacuated. By the end of the war its strength was no less than 100,000. To this must be added 23,452 cameleers of the Camel Transport Corps and a further 11,517 of other ancillary services, making a total of nearly 135,000 men. These men were employed on six-monthly contracts and thus the yearly turn over was in the neighbourhood of 270,000 men. Furthermore, in 1916, 10,463 Labour Corps personnel were sent to the Western Front, 8,280 to Mesopotamia and 600 to Salonika, while in October, 1918, 7,000 men were held in readiness to proceed to Salonika. When it is stated that the total male population between the ages of 17 and 30 did not exceed one and a half million, it will be realised that the War Effort of the country in man-power was by no means inconsiderable. It is difficult, if not impossible, to give accurate figures as to animal strength, but the establishment of the Camel Transport Corps was between 28,000 and 29,000 animals and that of the Donkey Transport Corps about 10,000 animals.

In the meanwhile, the Egyptian Army, raised to a strength of 30,000 men, was not only providing detachments to serve with the British on the Canal, at Aqaba, and later in Palestine, but was also engaged in the task, through the whole war period, of maintaining order in the Sudan.

### **C. A Survey of Post-War History, Political Tendencies and Nationalistic Movements and Internal Disorders**

9. 1918. Hardly had the thunder of the guns died away on the Western Front than a deputation presented itself at the Residency and, in the name of the whole Egyptian people, demanded the complete independence of the country. The deputation consisted of the late Saad Pasha Zaghloul,

the late Ali Pasha Sherawi and Abdel Aziz Pasha Fahmy. Zaghloul requested permission to submit the Egyptian demands to His Majesty's Government, and the High Commissioner, Sir Reginald Wingate, recommended that the request be granted, but the Foreign Office, in no uncertain manner, refused (1st December). He urged the Home Government to reconsider their decision, but again met with the same response. Shortly afterwards an appeal by the Nationalists to send a delegation (or Wafd) to the Peace Conference at Paris met with a like refusal, and Sir Reginald Wingate was called home to report. He never returned.

10. **1919.** In January Saad Zaghloul, in a fiery speech, publicly announced the Nationalist programme and agitators were sent secretly into the provinces to stir up the fellaheen, already simmering with discontent for reasons which will be examined later. In February the Egyptian Government made a last attempt to persuade the Foreign Office to receive a Nationalist Delegation. The attempt proved fruitless and the Prime Minister, Rushdi Pasha, resigned. The situation now became extremely tense and agitation reached a dangerous pitch. General Watson (the Acting G.O.C.) considered it necessary, therefore, to send for Zaghloul and the Nationalist leaders on 6th March and, after warning them that the country was still under Martial Law, advised them against subversive activities. Zaghloul's reply was to issue on the following day a strong protest against the General's action. This led to the immediate arrest on 8th March of the four most important agitators, namely, Saad Zaghloul, Hamed el Bassel, Mohammed Mahmoud and Ismail Sidky. On 9th March they were deported to Malta. Within a few days the whole Valley of the Nile was seething with revolt.

11. The military authorities were faced with a difficult problem. In the first place they had been taken almost completely unawares; in the second place the disorders were widely dispersed and lack of transport and the destruction of railway and telegraph lines greatly hampered military movement; and, lastly, the garrison was not only reduced but in some confusion owing to the process of demobilization. That there was a shortage of troops is evident from the fact that it became necessary to recall from the transports several thousand Australian and New Zealand troops who had already embarked for home and had handed in their rifles. No records are available of the exact number of troops in the country at the time of the outbreak, but it would seem that their number did not exceed 20,000.

12. On 9th March, the day of the deportations, students' demonstrations paraded the streets of Cairo and on the following day riots ensued, which the police were unable to suppress. By midday the military had been called in and the rioters were not dispersed before several persons had been shot. On 11th March lawyers and Government officials came out on strike and clashes between the mob and the military were frequent. The disorders were spreading and on 12th March riots took place at Alexandria, Tanta, Damanhur, Zagazig, Mansura, Shebin el Kom and other provincial towns, while bands of fellaheen made systematic attacks on communications, tearing up the railway and telegraph lines. By this time the military were patrolling the railway lines and roads in armoured trains and cars, and handbills were being showered on the malcontents from aircraft. The disorders continued, increasing in intensity until 17th March. Rioting at Alexandria was continuous and fighting took place between rioters and troops at Minet el Qamh, Tala, Zagazig and Damanhur. Serious riots broke out in Rosetta, at Zifta the mob hoisted the Turkish flag on the Markhaz offices and declared a Provisional Government, while similar scenes were enacted at Mansura, Benha, Samanud and Damietta.

13. This then was the situation that faced General Bulfin when he arrived in Cairo on 17th March to take over command. Cairo itself had now been completely cut off from the rest of the country, both railway and telegraph lines being destroyed. General Bulfin immediately decided on a more vigorous policy. Eighteen mobile columns were sent into the Delta, a relief force by river to relieve the beleaguered British communities at Asyut and elsewhere, and a punitive column to Upper Egypt, which by this time was ablaze. The relief force consisted of 250 men of the Royal Irish under Brigadier-General Huddleston, and the punitive column of a regiment of cavalry, a brigade of infantry and attached units, under Major-General Sir John Shea.

On the day after General Bulfin's arrival, news was received in Cairo of a ghastly massacre at Deirut, in Upper Egypt, where two British officers, five other ranks and an English official of the Prisons Department, all unarmed, were hacked to pieces in the train between Deirut and Mellawi. For this outrage 85 persons were eventually tried, including the Omdah of Deirut and most of his family; 28 were executed.

14. By 22nd March the Delta was nearly pacified. Patrols were policing the towns and mobile columns scouring the countryside. Aircraft bombed suspicious gatherings, armoured trains opened fire on persons approaching the railway line and armoured cars and lorries machine-gunned bands of peasants encountered on or near the roads. The Province of Qaliub was reported to be normal and conditions everywhere in the Delta were improving. By the 23rd March the main railway lines had been repaired and regular services were running. Two days later Asyut was relieved and by 29th March reassuring news was coming in from Upper Egypt.

In the meantime, Sir Reginald Wingate had been replaced by Sir Edmund Allenby, who arrived on 25th March. He at once set to work to get into touch with Nationalist leaders and on 7th April he issued a Proclamation giving Saad Zaghloul and his followers their freedom. This action was widely acclaimed by the mob, but two days later rioting in Cairo broke out afresh. This was chiefly directed against the Armenian colony, but murderous attacks on isolated British officers and men were beginning to become frequent. In two days eight soldiers were murdered and four officers and 15 other ranks wounded. Although the disorders as a nation-wide movement were over, a new phase, that of passive resistance, now began. Strikes of students, lawyers, Government officials and railway, tram and postal workers took place in Cairo, and for a few days communications were entirely suspended. The strike spread to Alexandria but, when violent methods were employed, the High Commissioner issued a stern proclamation and the strike collapsed.

15. Records of the casualties resulting from the 1919 "rebellion" are sketchy, but as far as can be ascertained five officers and 31 other ranks were killed, and six officers, 104 other ranks and four British civilians wounded. It was generally believed at the time that several thousand Egyptians were killed as a result of action taken by British troops. There is good reason to believe that this is a gross exaggeration. The correct figure is probably in the neighbourhood of 800.

16. The "rebellion" of 1919 is generally regarded as a political uprising, but this is only true in so far as it was engineered by political extremists, working on the grievances and fanaticism of the fellaheen. The latter, who formed the preponderant mass of the malcontents, were not then, and are not now, politically conscious. "Independence" was

no more than a word to them. The real causes of the uprising were more deeply seated and, summarized as briefly as possible, were as follows :—

(a) In 1917, when the supply of recruits to the Egyptian Labour Corps and other Corps was beginning to fall off, the British Military Authorities asked the Egyptian Government to supply conscripts from the yearly quota of youths liable to conscription. Hitherto, service had been voluntary. The Egyptian Government, instead of acceding to this request, put pressure on Provincial Mudirs to produce a certain number of conscripts and the Mudirs left the selection to the village Omdahs (Mayors). Petty tyrants at all times, the Omdahs were presented with a magnificent opportunity, not only of settling old scores, but of reaping a rich harvest of bribes from those able-bodied men who could afford to buy immunity to conscription. The harmony of village life was rudely disturbed, and was still less peaceful when the conscripts returned, burning for revenge.

(b) The ever increasing war needs of the army made it necessary to commandeer camels, mules and donkeys.

(c) Owing to the shortage of cereals and the consequent danger of famine, it became necessary in 1918 and 1919 to restrict the acreage put under cotton, from which fortunes were being made. Furthermore, it became necessary to establish a Supplies Control Board, which seized stocks of cereals on payment in order to ensure equitable distribution.

(d) The measures taken by the Supplies Control Board unfortunately did not prevent a serious shortage of cereals in 1918 and 1919. The poorer townsmen suffered particularly.

(e) The Red Cross Fund, which was organizing a subscription, received a handsome contribution from the Sultan. This, unfortunately, stimulated local officials, anxious to curry favour with their superiors, to obtain subscriptions from the fellaheen by methods of extortion bordering on blackmail.

(f) The sensational "boom" in cotton prices had filled the pockets of the fellaheen, who are notoriously restive when well-to-do, while the shortage of foodstuffs had exasperated the lower class townsmen.

All these grievances were sedulously exploited by political agitators, who laid the whole blame at the door of the British and who appealed to the religious fanaticism and natural xenophobia of the ignorant fellaheen. The tinder was ready and the spark to light it was the arrest of Zaghloul, a countryman himself and the fearless champion of Egyptian freedom. The lead came, as it usually does, from the students and Nationalist agitators and hotheads in Cairo. Once it became evident that the disorders in the capital were meeting with success, the whole country ran amok.

17. The year dragged on and, though the country was nominally pacified, the Nationalists continued to indulge in seditious propaganda and the "Egyptian problem" was still as far from settlement as ever. In November it was announced that a Commission, headed by Lord Milner, would come to Egypt to enquire into the cause of the riots and to study the whole situation. The Nationalists at once gave orders that the Commission was to be "boycotted"—feeling ran high and riots broke out again in Cairo. The most serious of these was on 16th November, when a mob attempting to loot in the Muski and Abdin area came into collision with the military. Over 100 rioters were killed and wounded. No sooner had these further disturbances been quelled than there began the murder campaign against British soldiers and officials which lasted for the next four years. This was inaugurated on 20th November, when Captain Cohen of the Labour Corps was shot down in cold blood near the Shubra Hospital.

Early in December, the Milner Mission arrived in Egypt and was openly "boycotted." The Prime Minister, Mohammed Pasha Said, protested against the arrival of the Mission before the peace with Turkey was signed, but his protest was overruled. He thereupon resigned and was succeeded by Yussef Pasha Wahba, a Copt.

18. **1920.** Despite the boycott, the Milner Mission met a considerable number of leading Egyptians and, having completed their enquiries, left Egypt in February.

Throughout the early part of the year public interest in Egypt was absorbed in economic questions. Cotton prices soared to bewildering heights, and the very high cost of living became a most serious problem until the market broke and a drop in prices brought relief.

In May Wahba Pasha resigned and was succeeded as Prime Minister by Tewfik Pasha Nessim, but the chief centre of political interest was in Europe. Zaghloul Pasha

arrived in London in June and held discussions with Lord Milner. In September four of Zaghloul's delegates arrived in Cairo, bringing the text of proposals made by him and Lord Milner for the basis of an Anglo-Egyptian agreement. Though condemned by the Nationalist (Watanist) Party, these proposals met with general approval from the Egyptian public. This, combined with a gradual decline in prices, tended to keep an atmosphere of comparative tranquility during the winter.

19. 1921. In January Lord Milner resigned from the Cabinet, and in the following month the report of the Milner Mission was published. On the whole it was well received by the country, only the Watanist die-hards expressing complete disapproval. But politics were soon overshadowed, certainly in the provinces, by the serious cotton situation, low prices and lack of business causing a veritable panic.

On 16th March Nessim Pasha resigned and a new Ministry was formed under Adli Pasha Yeghen, which evoked an outburst of popular enthusiasm, but the real political tension began in April, when Zaghloul Pasha himself returned to Cairo. His supporters gave him a tremendous reception, which completely turned his head and made him more grasping and arrogant than ever.

In May organized violence by the Zaghloulist extremists broke out and serious collisions occurred in Cairo between the mob and the police. At Alexandria gangs of Egyptian hooligans fell foul of the Greeks and Italians. It is not clear which party first attacked the other, but fierce fighting and looting of shops broke out and was not stopped until the British troops were obliged to intervene and take over the town, the casualties being 58 killed and over 200 wounded.

On 1st July an official delegation under Adli and Rushdi Pashas went to London and carried on a series of negotiations with the Cabinet until November, when the discussions were broken off. Early in December the official documents from His Majesty's Government, including what was generally called the "Curzon Project," were presented to the Sultan. The Ministry of Adli Pasha then resigned.

In December there was a recrudescence of murderous attacks on British subjects. As little or no help was given by the public to the authorities, the assailants, who chose their opportunities skillfully, usually managed to escape.

By December the activities of the leading Zaghloulists had taken such a violent and inflammatory turn that,

owing to the resultant danger to public security, Zaghloul Pasha and his seven chief supporters were ordered by the British authorities to refrain entirely from politics and retire to their country homes. As they refused to obey this order they were arrested on 23rd December and eventually deported to the Seychelles Islands. The result was a further outburst of violence and disorder both in Cairo and the provinces, which in some cases had to be suppressed with military aid.

20. 1922. The situation was complicated by the unwillingness of anyone to form a Ministry to carry on Government business, and early in February the High Commissioner and the Advisers for Justice and Interior were summoned to London. They returned to Cairo on 28th February and handed to the Sultan a Declaration from His Majesty's Government by which the Protectorate of Great Britain over Egypt was terminated. It was agreed that the Egyptian Government should elaborate a new Constitution and Electoral Law, the offices of Adviser for Interior and Education were abolished, while certain questions were reserved to the discretion of His Majesty's Government until an agreement could be concluded between the two Governments. These questions were four in number and are generally known as the "Four Reserved Points." They are as follows :—

- (a) The security of the communications of the British Empire in Egypt.
- (b) The defence of Egypt against all foreign aggression or interference, direct or indirect.
- (c) The protection of foreign interests in Egypt and the protection of minorities.
- (d) The Sudan.

A Ministry was formed under Sarwat Pasha, and on 15th March the Sultan assumed the title of King of Egypt.

To replace the deportees, the Zaghloulist Party formed a second Committee who in July published an inflammatory manifesto inciting the public to acts of violence. They were arrested, tried and condemned to seven years' penal servitude and a heavy fine. The transfer of Zaghloul Pasha from the Seychelles Islands to Gibraltar in August, 1922, met with general approval.

Throughout this and the two preceding years a marked feature in Egyptian politics was the extreme lack of discipline in the schools. The schoolboys struck work whenever they liked, the schools were used for noisy political meetings and seditious speeches, while most of the demonstrations

and acts of violence in the streets were engineered by schoolboys. This indiscipline was severely censured at a mass meeting of the British community on 2nd January, after the murder of an Englishman, and a resolution was passed calling on the Government to take firm measures to ensure discipline in the schools.

Owing to further outrages against British subjects a British Military Governor was appointed for Cairo. In February two bombs were thrown, one into the Army Headquarters and another near by. This led to the third Zaghloulist Wafd being arrested and deported to Kharga Oasis.

21. **1923.** The Ministry of Tewfik Pasha Nessim, who had succeeded Sarwat Pasha in the previous November, resigned in February, chiefly owing to an attempt to include the Sudan in the New Constitution, to which His Majesty's Government objected as violating the agreement of 28th February, 1922. This was construed as an affront to Egypt by all political parties, who refused to form a Cabinet, and it was not until 16th March that a Ministry of non-political nature was got together by Yehia Pasha Ibrahim.

On 5th July Martial Law was abolished and an Act of Indemnity promulgated. Zaghloul Pasha at once returned to Egypt, and in the elections held towards the end of the year he and his party gained an overwhelming majority.

22. **1924.** On 27th January, 1924, he became Prime Minister and the first Egyptian Parliament under the new Constitution met on 15th March.

In September Zaghloul was invited to come to England to discuss the reserved subjects with the English Prime Minister, but after three days the conference broke down and Zaghloul returned to Egypt. Then occurred an event which completely altered the situation. On 19th November the Sirdar of the Egyptian Army, Sir Lee Stack, was fired at and fatally wounded as he was leaving the Egyptian Army War Office. He died the next day. Since this crime was the logical outcome of the campaign of hatred, stimulated and encouraged by the public utterances of Zaghloul Pasha, His Majesty's Government made the following demands in reparation :—

- (i) Ample apology for the crime.
- (ii) Punishment of the offenders.
- (iii) Suppression of popular political demonstrations.
- (iv) Fine of £500,000.

(v) Withdrawal of all Egyptian troops from the Sudan within 24 hours and organization of the Sudan Defence Force.

(vi) Agreement to increase the Gezira irrigated area.

(vii) Withdrawal of all opposition to wishes of His Majesty's Government concerning protection of foreign interests in Egypt.

(viii) Revision of the rules and conditions governing service, etc., of foreign officials still employed by the Egyptian Government in accordance with the wishes of His Majesty's Government.

Zaghloul would only agree to the first four of these demands and refused the remainder. Lord Allenby accordingly ordered the Sudan Government to carry out No. 5 at once, and this was successfully accomplished in spite of the passive resistance of certain Egyptian units and a mutiny of two platoons of Sudanese troops in Khartoum. He further announced that unless the British demands were acceded to *in toto*, the Alexandria Customs would be seized. This apparently was done, but without the authorization of the Home Government. At this point Zaghloul's courage failed and he resigned on 24th November. He was succeeded by Ahmed Pasha Ziwer, who showed every disposition to work in accord with His Majesty's Government. He demonstrated this at once by accepting the four outstanding demands. Parliament was dissolved on 24th December.

23. **1925.** New elections took place in March, 1925. The new Parliament met and, since its first action was to elect Zaghloul as President of the Chamber, the King dissolved it the same day.

24. **1926.** Fresh elections under a new Electoral Law were held in May and resulted in a resounding Wafdist victory. On 25th May, the same day as the election results were published, six of the seven accused of complicity in the Sirdar murder case were acquitted by a majority verdict of the Court. Zaghloul Pasha, who had previously announced his intention of not taking office, now that his party had won a smashing victory at the polls was unable to resist the prospect of power. Although Lord Lloyd made it clear to him in an interview on 29th May that his Premiership would not be acceptable to His Majesty's Government, the Pasha was intractable. The High Commissioner therefore thought it advisable to request the despatch of a battleship to Alexandria as a precautionary measure.

On 2nd June it was officially announced that Judge Kershaw, the presiding Judge at the trial referred to above, had resigned his position owing to his inability to agree with the verdict of his Egyptian colleagues. On the same day news was received that H.M.S. Resolute had left for Alexandria. The situation now took a very different turn. On the following day, at a banquet given to Zaghloul Pasha at the Continental Hotel, it was clearly intimated that in the interests of his health he should stand down from office. On 7th June, therefore, a new Ministry under Adly Pasha was formed, which comprised six Wafdist, two Liberals and two Independents. Constitutional Government was restored by the opening of Parliament after its long suspension on 10th June.

25. 1927. The Wafdist preponderance in Parliament proved too strong for Adly Pasha and he resigned on 19th April. Parliament was adjourned until 26th April, and on the same date Abdel Khalek Pasha Sarwat, who had been called upon by the King to form a Ministry, announced the composition of his Cabinet.

In the meantime, Ahmed Pasha Khashaba, the Minister for War, had, under Wafdist pressure, prepared a measure for presentation to Parliament which envisaged—

- (i) Increasing the trained reserve of the Egyptian Army.
- (ii) Increasing its establishment.
- (iii) Abolishing the restrictions upon the carriage of arms.
- (iv) Creating a military Air Force.

This, in conjunction with the Wafdist attempts to exert political control over the Army and the efforts of the Minister for War to diminish the functions and authority of the Inspector-General and the British officers serving in the Ministry of War, led the High Commissioner to address a Note to the Prime Minister on 31st May. At the same time, Lord Lloyd, considering that popular feeling was running dangerously high, requested the despatch of a warship to Alexandria. After a somewhat evasive reply the Egyptian Government eventually complied with the British demands and the crisis passed.

Conversations took place in July between Sir Austen Chamberlain and Sarwat Pasha, in the course of which an Anglo-Egyptian Treaty was discussed and the way was paved for future negotiations.

On 23rd August Saad Pasha Zaghloul succumbed to diabetes. His obvious successor as leader of the Wafd seemed to be his nephew, Fathallah Pasha Barakat. He had a rival, however, in Mustapha Pasha el Nahas. At the meeting of the Wafd which took place to decide on the new leader, Nokrashy, who supported Nahas Pasha, managed to terrorize the members of the Wafd Executive into electing his candidate.

26. **1928.** Owing to the refusal of the Wafd to discuss in Parliament the question of an Anglo-Egyptian Treaty, Sarwat Pasha handed in his resignation on 17th March. He was succeeded on the same day by Mustapha Pasha el Nahas, who included in his Cabinet two Liberal-Constitutionists, Mohammed Pasha Mahmoud and Gaafar Pasha Wali. Nahas Pasha was not long able to hold the reins of a very restless mount. After innumerable internal dissensions in the Cabinet, four Ministers, Mohammed Pasha Mahmoud, Gaafar Pasha Wali, Ahmed Pasha Khashaba and Ibrahim Bey Fahmy, resigned. On the 25th of June the King took the somewhat unusual step of addressing a letter, in the form of a Royal Rescript, to Nahas Pasha, in which, after thanking him for his services to the country, he dismissed him. He was succeeded two days later by Mohammed Pasha Mahmoud, who formed a Cabinet consisting of seven Liberals and two Ittihadists (Palace Party). On 29th June Parliament was adjourned for a month, and on 19th July both Chambers were suspended for three years in accordance with Articles 15, 89, 155 and 157 of the Constitution of 1923. There now ensued a period of enlightened government such as Egypt had not known since before the War.

27. **1929.** The year 1929 witnessed the second visit of the King to Europe and Treaty overtures made to Egypt by the Labour Government in England. The Premier travelled to the United Kingdom and a series of discussions took place between him and Mr. Henderson. Mohammed Pasha Mahmoud returned to Egypt bearing with him the draft Treaty on the following lines :—

(i) The Military Occupation to be declared terminated, but the British Army to continue to ensure the safety of the Suez Canal by maintaining forces in the Canal Zone, east of longitude 32 E.

(ii) Egypt to become a member of the League of Nations.

(iii) Egypt and Great Britain to be united by a defensive and offensive alliance.

(iv) The protection of foreign interests to devolve on Egypt.

(v) Foreign officials and advisers, when employed, to be British.

(vi) The British Government to use its influence with the Powers with a view to the abolition of the Capitulations.

(vii) Great Britain to be represented in Egypt by an Ambassador, who would have diplomatic precedence.

(viii) The status of the Sudan to continue to be defined by the 1899 Convention, without prejudice to future alteration if necessary.

(ix) The Treaty to be reviewed, if necessary, after the expiry of twenty-five years.

(x) The Egyptian Army to be armed and equipped on the same lines as the British Army and to be advised and assisted by a British Military Mission.

Mohammed Pasha Mahmoud's undoubted success, both at home and abroad, his independent character and his unguarded references while in England to a "dictatorship" had, unfortunately, aroused the jealousy and suspicion of his Royal master. On 2nd October, therefore, the Ministry resigned, the ostensible reason being that the draft Treaty should be submitted to a constitutionally elected Parliament. On the 5th of the same month Adly Pasha Yeghen formed his third Administration. This was in the nature of a transitional government, whose object was the restoration of a constitutional regime and the holding of elections. The latter took place in December and resulted in a smashing victory for the Wafd.

28. 1930. The King now called on the leader of the majority to form a Government, and on 1st January Mustapha Pasha el Nahas formed his second Ministry, exclusively Wafdist. It was not destined to have a much longer life than his first. On 6th February Parliament gave the Cabinet a mandate to initiate Treaty discussions with the British Government, although this had already been done by the preceding Prime Minister. In March, therefore, Nahas Pasha, accompanied by a large retinue, left for England. It was the beginning of their fall. The intransigent attitude of the Wafd leader, particularly over the question of the Sudan, stultified any efforts displayed

by the British Government to produce a tangible result. The failure of the delegation, together with the sudden fall in the price of cotton which led the Government to spend £E.12,000,000 of the Reserve Fund in order to intervene in the cotton market, aroused violent criticism. Added to this the refusal of the King to sign the draft Decree of a Law concerning the prosecution of former Ministers for unconstitutional acts (a measure aimed at Mohammed Pasha Mahmoud), put the Government in a quandary. Nahas Pasha, in order to force the King's hand, tendered his resignation on 17th June. To his immense surprise and chagrin his resignation was accepted and Ismail Sidky Pasha was entrusted with the formation of a new Cabinet.

Sidky Pasha, the new Premier, had been a member of the original Wafd and had been deported with Saad Zaghloul Pasha to Malta. His politics had meanwhile undergone a remarkable change. A clever financier, a capable administrator and a masterly tactician, Sidky Pasha was the ablest and most unscrupulous politician in Egypt. He was at once faced with a serious problem. In consequence of the prorogation of Parliament, the Wafd leaders declared a policy of "non-co-operation and obstruction," and with these ends in view commenced to tour the provinces. Almost immediately disturbances broke out, and at Cairo, Bilbeis, Mansoura and Alexandria the authorities were forced to fire on the mob. In Alexandria the riots took on a serious complexion and the intervention of British troops was narrowly averted. The disorders were eventually quelled once the Prime Minister realised that he would not incur British criticism if stringent measures were employed.

The task of the new Government was threefold: to restore confidence in the country's financial stability, to crush the Wafd, and to consolidate the Palace regime. The Premier started his difficult task with a will. The economic tangle could be left to unravel itself in the natural course of time. The first and most important objective was to deal with the Wafd. To this end the Premier formed a new Party, the Shaab (People's) Party. This was to provide him with the necessary Parliamentary majority at the forthcoming elections. In the meantime the Constitution of 1923 was abrogated and replaced in October by a new Constitution which virtually made the King all-powerful. This also entailed a change in the Electoral Law and two-degree elections were re-introduced.

29. **1931.** As a protest against the Constitutional change, the Liberal and Wafd parties decided to boycott the elections, which were held in January. This, of course, facilitated Sidky Pasha's task. By dint of ingenious "rigging" all the Government candidates were returned, although not more than five per cent. of the electorate voted. The Parliamentary Opposition had dwindled to some eight Watanists (Nationalists) and a few Independents. The abstention of the Wafd was a tactical error of the first order and merely served to relegate them to the "wilderness." Under cover of a Parliamentary regime, the Premier had established a complete dictatorship, but a dictatorship controlled by the King. The High Commissioner, whose policy of neutrality had given the King and the Premier a free hand, held aloof. The arena was now clear for Sidky Pasha to continue his duel with the Wafd, who had formed an alliance with the Liberal-Constitutionists under Mohammed Pasha Mahmoud.

30. **1932.** Rigorous police measures were employed to prevent demonstrations by the Wafd and Liberals. Wherever they went the Opposition leaders were followed by posses of police and their movements were restricted. Furthermore, the Prime Minister's task of crushing the Wafd was facilitated at the beginning of 1932 by internal dissensions in the Party, which culminated in a schism. For some time the Wafd had been grouping itself into two distinct factions, the Extremists lead by Nahas Pasha, Makram Ebeid and Nokrashi, and the Moderates under Fathallah Pasha Barakat, Hamed Pasha el Bassel and Ali Pasha el Shamsi. The latter advocated co-operation with a National Government and the former were opposed to it. After a stormy session of the Wafd Executive the dissenting members, eight in number, cut adrift from the parent Party and founded the Saadist-Wafd Club, which became the headquarters of the new party. At one fell swoop, the Wafd lost the service of eight experienced politicians and tried parliamentarians. Sidky Pasha had accomplished two of his difficult tasks. The third, the rehabilitation of the country's finances, was probably beyond the power of any Egyptian statesman to encompass.

The invariable concomitants of repressive government in the Orient now began to manifest themselves. The Prime Minister, the Minister of Public Works (Ibrahim Fahmy Pasha Kerim) and the Minister of Communications (Tewfik Pasha Doss) were strongly suspected of peculation. Although nothing was proved there seems little doubt of their venality.

Administration in the Provinces, too, left much to be desired. The crisis of the previous year had left the "fellah" with little save his land and his cattle and these were strained upon with the greatest harshness when he was unable to meet his taxes. Provincial officials took advantage of the impoverished condition of the "fellah" to indulge in corruption, persecution and malpractices of all kinds. The Badari (torture, sodomy and murder) Case brought matters to a head. The Minister of Justice resigned in protest and the Minister of Foreign Affairs, who felt that he could no longer be associated with such Ministerial colleagues as Tewfik Pasha Doss and Fahmy Pasha Kerim, took this opportunity of relinquishing his portfolio. The Prime Minister, therefore, re-formed his Cabinet, excluding Tewfik Pasha Doss and the two Ministers who had resigned.

31. 1933. At the beginning of the year Sidky Pasha was seized with an apoplectic stroke and repaired to Europe in the summer to undergo a cure. By this time the King was ready to jettison his Prime Minister. The latter had completed two of his tasks successfully and the country was just beginning to emerge from the financial chaos of the last few years. Furthermore, Sidky Pasha's undoubted success had given him authority and power such as no Prime Minister had enjoyed for the last two decades. This was enough for the King. On his return from Europe in the autumn, Sidky Pasha tried to enforce a Cabinet "reshuffle" on the King by threatening to resign from motives of ill-health. The King accepted his resignation on the advice of Ibrashi Pasha, the Head of the Royal Household, who, besides being the Prime Minister's personal enemy, had virtually controlled the Administration during Sidky Pasha's absence. Abdel Fattah Pasha Yehia, the Minister of Foreign Affairs who had resigned as a result of the Badari Case, was summoned from Europe to take over the reins of power. In the meanwhile, Ibrashi Pasha drew up a list of Ministers, which was presented to Yehia Pasha as he stepped off the boat as his "ready-made" Cabinet. The new Prime Minister, although a man of great personal integrity and one who had discharged his office as Minister of Foreign Affairs with a measure of success, was utterly unsuited to his task. Weak, vain and obstinate, he was quite unable to lead or hold together the team of Ministerial mediocrities at whose head he had been so abruptly placed. The power lay in the hands of the King's creature, Ibrashi Pasha.

32. **1934.** Such was the situation at the beginning of 1934. The prolonged struggle between autocracy and demagoguery seemed decided in favour of the King, whose power was now well-nigh absolute. With a Cabinet of nonentities and a subservient majority in Parliament, the King, through the medium of Ibrashi Pasha, virtually controlled the entire machinery of State. But at this juncture he fell ill, and although he enjoyed a temporary recovery, by the summer he was pronounced to be in considerable danger, his heart, already weakened by chronic kidney disease, being affected. During this period Ibrashi Pasha's power increased to such an extent that the British Government became alarmed as to the course events might take should the King die. It was feared that the Council of Regency, whose composition was not known, would be found to include persons unacceptable to His Majesty's Government and perhaps subject to Ibrashi Pasha's influence. Only consideration for King Fuad restrained the British Government from demanding Ibrashi Pasha's removal. In October the King had sufficiently recovered for them to do so. But the King had no wish to jettison the man who had faithfully served him. A crisis ensued. Yehia Pasha, floundering out of his depth and taking his orders from Ibrashi Pasha, soon found himself in turbulent waters. His vanity and obstinacy led him into conflict with the Residency which could have but one termination. A false move was made by the Egyptian Chargé d'Affaires in London and the Prime Minister found his position untenable. He resigned. Thus ended a puppet administration of almost unparalleled ineptitude, noteworthy alone for its failure to institute any constructive measures or legislation and for a series of crisis, engineered to maintain in power an unscrupulous and ambitious intriguer.

The new Prime Minister, Tewfik Pasha Nessim, took office on 14th November and met with a popular acclamation such as is seldom accorded to an Egyptian statesman. Respected throughout the country for his integrity, pledged to abolish the 1930 Constitution and the Palace regime, and known to be in sympathy with the Wafd, he received an almost national ovation. The students went on strike for several days to demonstrate their enthusiasm and the nation heaved a sigh of relief.

The new ministry was formed from men of no political tincture but of proven worth in administrative and judicial appointments and furthermore enjoyed the support of the Wafd. The Prime Minister at once commenced his task of

purging the administration and eradicating all traces of the old regime. By 30th November he had succeeded, though with some difficulty, in persuading the King to abolish the Constitution of 1930.

33. 1935. But although the declared object of Nessim Pasha was the restoration of democratic, constitutional government, a whole year had elapsed before he was able to re-introduce the original Constitution of 1923, and then only through the pressure of extraneous circumstances. In the meantime the evident intention of Italy to attempt the conquest of Abyssinia in the following autumn was fluttering the European dove-cots. Great Britain had declared her intention to stand by the Covenant of the League; the Italian Press had launched a bitter campaign against British action and intentions; and reinforcements had been sent to Libya. This threat to Egypt's Western Frontier and approval of the British attitude at Geneva distracted the attention of Egyptian politicians from internal affairs and produced a feeling in the country towards Great Britain of greater friendliness than had existed since the time of Lord Kitchener. The situation called for co-operation between the two countries and in September Nessim Pasha expressed his country's readiness to place her Army and resources at the disposal of Great Britain in the event of aggression from Libya. The Mediterranean Fleet, together with units of the Home Fleet, had meanwhile concentrated at Alexandria, with detachments on the Suez Canal, while a military force, in which units of the Egyptian Army were included, was assembled for the defence of Egypt's Western Frontier, based on Mersa Matruh. Italy's bellicosity produced a decided feeling of insecurity in the country; indeed, there was a minor panic on the Alexandria Bourse in the late summer, and the Wafd, though not without considerable internal dissensions, decided that the interests of the country demanded their continued support of the Nessim Administration. In the opinion of many, a golden opportunity had presented itself for Great Britain to take advantage of the existing friendly feeling, to make some gesture in the form of a declaration that would, while satisfying Egyptian aspirations and *amour-propre*, assure her of Egypt's whole-hearted support. The opportunity, however, was not taken. On the contrary, a speech by Sir Samuel Hoare, made on the eve of the Nationalist anniversary (13th November) and which must be regarded now as somewhat ill advised, expressed disapproval of the Constitution of 1923. Although the Foreign Secretary made

it unmistakably clear that this expression of opinion in no way implied a veto, the Wafd and Egypt's youth thought otherwise. On 13th November Nahas Pasha announced the withdrawal of Wafd support from the Government and the students came out on strike. Minor riots ensued and continued sporadically until the end of the year, the police being frequently forced to fire, much damage being done to public property, five students losing their lives, and many rioters and police being injured. There can be no doubt that the weakness displayed by the Prime Minister greatly aggravated the danger of the situation. Severe measures at the outset would have quelled the disorders in a few days and acted as a deterrent for the future. Nevertheless the clamour of the students for the restoration of the 1923 Constitution and the conclusion of a treaty with Great Britain focussed attention in the latter country on Egypt. Towards the middle of December, therefore, when Nessim Pasha was about to resign as a result of his inability to procure the restoration of the Constitution, he was informed by His Majesty's Government that they had no intention whatever of preventing its re-introduction. Accordingly, on 13th December, the 1923 Constitution was restored by Royal Decree. But instead of pacifying youthful turbulence, this measure produced a contrary effect. The young agitators not only attributed the return of the Constitution to their violent efforts but also the fall of Sir Samuel Hoare. They thought they detected in the British Government's complaisance that weakness which they always associated with a concession in face of violence. They therefore announced their intention of continuing their demonstrations until the British Government would agree to negotiate. At the same time such pressure was brought to bear upon Egyptian politicians, both by threats and by force, to sink their differences that by the end of the year they found themselves, in many cases unwilling, participators in a combination of all the parties termed the "United Front."

The year which at one time seemed to offer such propitious opportunities to the British Government, but had ended in turmoil and bitterness, had several remarkable features. These may be summarised as follows :—

(a) The recognition by Egypt of her insecurity, and her consequent appeal to Britain for support, in the face of Italian threats to her frontiers.

(b) The Wafd's support of the Government and their evident desire for "respectability" and an understanding with the British.

(c) The despatch of naval, military, and air reinforcements by the British Government to Egypt as a result of Italian bellicosity.

(d) The return of the original Egyptian Constitution of 1923.

(e) The students' disorders after five years of tranquillity and the formation of semi-Fascist groups among the country's youth.

34. **1936.** In January Mr. Anthony Eden sent a favourable verbal reply to the Egyptian Government's request for the initiation of treaty negotiations with the "United Front," and both Governments later exchanged Notes on this subject. But at this juncture the King, who had never accorded Nessim Pasha his confidence as he considered him at once a British puppet and the tool of the Wafd, saw fit to rid himself of his unwelcome Minister. On 22nd January, therefore, Nessim Pasha's resignation was coldly accepted. An interregnum of ten days ensued, and after the Wafd had refused to form a Ministry in coalition with the other parties of the "United Front," the Government was entrusted to Ali Pasha Maher.

In the meanwhile the British Government had agreed to enter on treaty negotiations provided that the two outstanding difficulties of the Sudan and the Military Clauses were first settled by preliminary discussions to be held in Cairo. These discussions opened on 2nd March, between the High Commissioner, assisted by technical advisers in the persons of the three Commanders-in-Chief in Egypt, and the "United Front" headed by Nahas Pasha, the leader of the Wafd. The Egyptian delegation included seven Wafdists and six non-Wafdists, prominent amongst the latter being the three ex-Prime Ministers, Mohammed Mahmoud, Sidky and Yehia Pashas. Discussions continued until the end of April, when they were adjourned in view of the forthcoming general election.

It had been the declared intention of Ali Pasha Maher on taking office to respect the Constitution which had been so recently restored. This involved the holding of a General Election. Somewhat to the surprise of many political observers who credited Ali Pasha Maher with authoritarian aspirations, he stood by his pledge and gave instructions for the preparation of electoral lists, etc., to proceed. The General Election took place on the 1st May and proved a sweeping triumph for the Wafd, who secured 166 out of a total of 232 seats.

35. An important event in the history of Egypt had taken place meanwhile. King Fuad, whose health had given cause for anxiety for a considerable period, died on 28th April after a brief final illness, depriving his country of a monarch, unbeloved by the people, but nevertheless an astute ruler of the old Turkish school, and an adept at the art of playing off man against man, party against party, to the benefit of the political equilibrium of the country and the maintenance of his Dynasty. He was succeeded by his only son Farouk, absent at the time of his father's death in England where he had been sent to complete his studies. King Farouk, who was born on 11th February, 1920, being at King Fuad's death just over sixteen years of age, remained a minor under the Egyptian Succession Law until August, 1937, when he reached the age of eighteen. Accordingly it became necessary to appoint a Regency Council, and on 8th May the following were appointed Regents :—

Prince Mohammed Ali (Nephew of King Fuad).

Aziz Pasha Izzet.

Sherif Pasha Sabri (Brother of the Queen).

These appointments were the final act of the Cabinet of Ali Pasha Maher, who on the following day submitted his resignation and was succeeded as Prime Minister by Mustapha Pasha el Nahas. On the 23rd May the first Wafd Parliament since 1929 was opened by the Regent.

36. The Treaty Negotiations continued during the months of May, June, July and August. In view of their successful termination little comment is necessary. Though the discussions progressed in an atmosphere of complete cordiality and goodwill, there were moments when they seemed doomed to failure, and on 2nd June the High Commissioner (Sir Miles Lampson) found it necessary to proceed to London to consult the British Government. He returned on 29th June, when discussions were resumed with happy results. On 24th July the contentious military clauses were agreed, and on 1st August those dealing with the Sudan. The remainder of the Treaty, being based on agreement reached during the 1930 negotiations, presented no difficulties. In the middle of August the Egyptian delegation proceeded to London, where the Treaty was signed at the Foreign Office on the 26th August. It was subsequently ratified by the Egyptian Chamber and Senate on the 14th November and 19th November respectively, and the Instruments of Ratification by both contracting parties were exchanged in Cairo on 22nd December, on which date Sir Miles Lampson exchanged his role of High Commissioner

for that of British Ambassador. The full terms of the Treaty and Notes relevant to it are contained in Appendix VI of this Military Report. It merely needs to be added that except for a few small demonstrations in Cairo and Alexandria, the signing of the Anglo-Egyptian Treaty aroused singularly little interest in Egypt except in European circles. The majority of the Press pronounced it a realization of complete Egyptian independence, the minority condemned it as legalising a virtual British Protectorate. Similar views coloured subsequent discussions in the Chamber. Constructive Government measures were relegated to the background during the remainder of 1936 whilst Nahas Pasha and the Wafd delegates who held positions in his Cabinet indulged in an orgy of celebration of their successful efforts for their country. Nepotism reached limits rarely exceeded in modern Egyptian history, and the business of Government offices was suspended to satisfy the importunities of place-seeking supporters of the Wafd.

37. Other features of the year 1936 were the continual indiscipline of the schoolboys and students, every popular anniversary or minor grievance being taken as an opportunity for a strike, and the development of the Blue Shirts. This uniformed "army" of Nahas Pasha's followers, fully 50 per cent. of whom are corner boys and hooligans, became increasingly prominent at every public function, where they were at pains to usurp the functions of the police, with a singular lack of success. Unpopular with the general public they were themselves divided into dissentient elements, and faction fights within the organization became the order of the day. It seemed at one time that Nahas Pasha had produced a Frankenstein which he was himself unable to control, but in November he decided that the activities of the Blue Shirts should be restricted and regularized, and subsequently further appearance in uniform and the carrying of arms was prohibited.

The British forces concentrated in the Western Desert during the Anglo-Italian crisis of 1935-36, including the 5th Division from the United Kingdom, were gradually reduced during the spring and summer of 1936 as tension diminished, and the last detachments were withdrawn from Mersa Matruh during the month of September.

#### **D. Effect of the Reduction of British Officials in Egypt**

38. As a result of the recommendations of the Milner Mission, by the end of 1922 200 European officials in the employ of the Egyptian Government were either dismissed

or claimed permission to retire. By the end of 1924 the majority of the remainder had taken indemnity and returned to England; out of a total of over 1,000 less than 15 per cent. taking their indemnity and remaining with the Egyptian Government on a contract basis. The posts of Director-General of the European Department, Financial Adviser and Judicial Adviser were retained, ensuring a measure of British control in these vital departments of the Egyptian Administration, but as a corollary of the Treaty, these two officials have now tendered their resignations. A new British Adviser was added in May, 1935, in the person of an Adviser to the recently formed Ministry of Commerce and Industry.

39. The elimination of the great mass of British officials from the Government has not had the devastating effect envisaged by some critics in so far as the central administration is concerned. There now exists a not inconsiderable proportion of Egyptian officials, British trained, who are able to carry out the minor functions of government with reasonable honesty and efficiency. In the Provinces, however, where the administration is entirely in the hands of the Egyptians, matters are not so satisfactory, and corruption and mal-administration are rife. Happily, a measure of British control has so far been maintained in the Egyptian Army, Frontiers Administration, Public Security Department, Ministry of Finance, and, to a lesser degree, in the Ministry of Justice. This measure of control will inevitably be weakened and in the Public Security Department removed altogether as a result of the Treaty.

40. The pernicious system of short contracts does, however, put many minor British officials in a position where a natural desire to retain lucrative employment may make them hesitate to alienate superior Egyptian authority by that unwavering zeal for impartial administration and the welfare of the Egyptian masses, which was at one time characteristic of their class and which, however odious to the less worthy Egyptian official, eventually redounded to the credit of British prestige. It was to this end that the short contract system was devised by the Nationalists in the first instance. The net result, therefore, of the diminution of British control has been a marked deterioration in the efficiency, prestige and honesty of the administration as a whole.

Whilst no Egyptian would publicly support a restoration of the old conditions, which are in any case out of the question as a result of the Treaty, influential persons in the

Provinces will often admit in confidence that an increase in the British Inspectors of the Irrigation Department would be welcomed.

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the Sudan.

## CHAPTER II

## SYSTEM OF GOVERNMENT

General Description.

The Monarchy.

The Constitution.

Central Government.

Parliament, the Executive, details of Ministries and Departments.

Local Government.

Legal Systems.

Administration of Justice as regards Egyptians. Native Tribunals. The Parquet. Administration of Justice as regards Foreigners. Mixed Tribunals. State Legal Department.

Finance.

The Ministry. Revenue and Expenditure. Details of Taxation. Criticism of Internal Finance. Public Debt. Customs. Coastguards and Fisheries and other Finance Departments. Commerce and Industry.

## 1. General Description

Egypt is an independent Sovereign State with an hereditary Monarchy and representative institutions. Legislative authority is vested in the King, concurrently with the Senate and Chamber of Deputies. Their powers and freedom of action are to some extent restricted by various international obligations.

*The Monarchy.*—The present reigning Sovereign is H.M. King Farouk, born in Cairo on 11th February, 1920. He succeeded to the throne on the death of his father King Fuad I on 28th March, 1936.

The King's majority, under a Royal Rescript of 13th April, 1932, was fixed at 18 years, and until King Farouk attained this age a Regency Council was appointed. The Council consisted of—

*President* (a) H.R.H. Prince Mohammed Aly, First Cousin to King Farouk.

*Members* { (b) Aziz Izzet Pasha.  
(c) Sherif Sabry Pasha. Uncle to King Farouk (on his mother's side).

*The Constitution.*—The Constitution of Egypt, as promulgated by the Royal Rescript of 22nd October, 1930 (a revised edition of the 1923 Constitution), was abrogated in November, 1934, as one of the conditions under which the Ministry of Tewfik Pasha Nessim took office, and in 1935 the Constitution of April, 1923, was restored.

The following are the principal points of the 1923 Constitution :—

Egypt is declared a Sovereign State, its monarchy hereditary and its Government representative. Egyptians have equal legal, civil and political rights, irrespective of race, language or religion. Liberty of the individual and of religious belief is guaranteed.

All powers emanate from the Nation. The King exercises legislative powers concurrently with the Senate and Chamber of Deputies. No measure can become law unless it is voted by Parliament and sanctioned by the King. The King can dissolve the Chamber of Deputies, to which the Ministers jointly and separately are responsible. All powers shall be exercised through the intermediary of the Ministers. No foreigner or member of the ruling Dynasty can be a Minister. Powers of appointment and dismissal are vested in the King. The King is the Commander-in-Chief of the Army and the Navy, but no war may be declared without the consent of Parliament.

Islam is the State religion and Arabic the official language.

The Constitution does not effect Egypt's obligations to foreign States or the rights of foreigners acquired in Egypt by virtue of recognized treaties and customs.

The Constitution is applicable to the Kingdom of Egypt without prejudice to the rights of Egypt in the Sudan. The King's title will be established after the status of the Sudan has been finally determined by negotiation.

## 2. Central Government

### (a) *Parliament*

The Parliament consists of a Senate and a Chamber of Deputies. The Senate consists of 132 members, of whom 53 are nominated by the King and the remaining 79 by indirect universal suffrage for a period of 10 years. Half of the Senate, whether nominated or elected, is renewed every five years. The President of the Senate is nominated by the King. The Chamber of Deputies consists of 232 members elected by direct universal suffrage for a period of five years.

All members of Parliament receive an annual allowance of £E.480.

The seat of Parliament is in-Cairo.

Taxes can only be imposed, reduced or abolished by Law, and no public loan may be contracted without the consent of Parliament. The Budget must be presented to Parliament three months before the beginning of the financial year. Existing financial obligations incurred through the Public Debt or international engagement cannot be modified.

If the King does not consider it advisable to sanction a Bill voted by Parliament, he will return it to Parliament within one month for reconsideration.

Failure to return the Bill within the prescribed period constitutes sanction, and the Bill therefore becomes Law. If a Bill sent back for reconsideration to Parliament is again voted by a two-thirds majority of the numbers of each House, the Bill receives the force of law and is promulgated.

Similarly, if in the next session (a session is normally of six months' duration) Parliament votes the same Bill with an absolute majority it acquires the force of Law and is promulgated.

In the intervals between sessions and during the dissolution of Parliament, the King has the power, in time of emergency, to issue Decree Laws, which should be submitted to Parliament in its next session. If these are not submitted, or if they are rejected by one of the Houses, they become null and void.

#### *(b) The Executive*

The Council of Ministers consists of the Prime Minister and Ministers of—

Interior.	Foreign Affairs.
Agriculture.	Public Instruction
Communications.	(Education).
Finance.	Public Works.
Commerce and Industry.	Waqfs (Pious Foundations).
Justice.	War and Marine.

As a Cabinet, it exercises a general control over affairs of State.

Royal Orders must be countersigned by the Prime Minister and the Minister or Ministers concerned. Ministers are held jointly responsible to the Chamber of Deputies for

the general policy of the State, and each Minister for the conduct of his own Ministry. This Chamber alone has the right of calling Ministers to account for misdemeanours committed in the execution of their office. The form of procedure to be adopted in such circumstances is embodied in the Constitution. The King's orders, whether written or oral, do not exempt Ministers of responsibility.

By a Royal Decree of 27th January, 1934, every member of the Cabinet, on taking office, is required to swear an oath of loyalty to the Throne. This provision was overlooked when the 1930 Constitution was framed. The oath has not been taken by any subsequent cabinet, and it seems likely that it will fall into abeyance.

The functions of some of the above Ministries call for no special comment. The functions of the remainder will be found in the following notes or in other chapters of the Report to which cross reference is made.

One general point may be referred to here, namely, that in the Egyptian Ministries there are no Permanent Under-Secretaries such as we have in England. The Under-Secretaryships of the various Ministries are political appointments and consequently the holders of these offices disappear with the Minister when a change of Government takes place. This system undoubtedly militates against continuity of policy, progress and constructive statecraft.

#### (c) *Ministry of the Interior*

The Ministry is responsible for Public Security and the internal administration of the country, with the exception of the district of Sinai, the Western Desert and the oases of Kharga, Dakhla and Bahariya, which are under the control of the Frontiers Administration of the Ministry of War and Marine.

Directly under the Minister are three Under-Secretaries, those of the Central Administration, Local Administration and Public Health. The Director-General of a European Department also has direct access to the Minister.

*Central Administration Department.*—The principal subdivisions are the Public Security and Prisons Departments, each under a Director-General. The Director-General for Public Security controls the Police Force, the organization of which will be found in Chapter XVIII, and similar services. The Labour Bureau, founded in 1929, is also at present a sub-Department of Public Security.

The following is a list of the prisons under the control of the Director-General of Prisons:—

*Convict Prisons.*

Tura (El Giza Province).

Abu Zabal (Qalubiya Province).

*Central Prisons.*

*Governorates.*

Cairo.

Alexandria (2). (One male, one female.)

Port Said.

*Mudiryas.*

Benha.

Tanta.

Shebin el Kom.

Damanhur.

Zagazig.

Mansura.

Beni Suef.

Asyut.

Qena.

Minya.

Sohag.

*Reformatories.*

Delta Barrage (adults).

Bulaq el Daqrur.

Giza (boys and girls).

*Local Administration Department.*—The system of Local Government is described in Section 3 of this chapter.

*European Department.*—This Department ceases to function as a result of the Anglo-Egyptian Treaty of Alliance of 1936. As, however, the role of this Department in the past may from time to time become the subject of discussion in the future, its specified functions are outlined below.

These functions were, however, extremely elastic and a mere list of duties can give no adequate idea of the value of this Department to the British Army in the past as the connecting link with the Egyptian Authorities and isolated European communities in security and other matters.

(i) Advice to the Director-General of Public Security on steps which should be taken to deal with occurrences threatening the lives and property of foreign subjects.

(ii) Examination conjointly with the Director-General of Public Security of any proposals of importance relating to the organization or staff of

the Cairo City, Alexandria City and Suez Canal Police Forces, or the powers of Police Commandants in those towns. Examination of proposals regarding the appointments of Director of Permit Office and of Press Bureau, Commandant, Assistant-Commandants, Inspectors, Mamurs, Chiefs of Zapt Office of the Police Forces referred to above.

(iii) Examination of criminal charges against foreign subjects. Administrative enquiries in this connection. Advice on grant or refusal of permits to foreign subjects, deportations, etc.

(iv) Investigation of complaints of foreign subjects on matters within the sphere of the Public Security Department.

(v) Advice on regulations affecting foreign subjects which the Public Security Department propose to issue.

(d) *Ministry of Agriculture*

The functions of this Ministry are implied in its name and no further comment is necessary.

(e) *Ministry of Communications*

Controls and co-ordinates the various Government Departments concerned with Communications and Transport, and represents the Egyptian Government in matters of aviation. Services under the control of these Departments are dealt with in other chapters of the Report as follows :—

Ports, Lighthouses and	Chapter X—Ports—and as far
Harbour Works.	as the armed forces of the
	Ports and Lights Adminis-
	tration are concerned ;
	Chapter XVIII—Armed
	Forces and Uniformed
	Bodies other than the
	Egyptian Army.

Post Office .. ..	} Chapter XIV.
Telegraphs and .. ..	
Telephones .. ..	
Railways .. ..	Chapter XIII.
Roads and Bridges .. ..	Chapter XI.
Aviation .. ..	Chapter XV.

(f) *Ministry of Finance*

(See Section 5 of this chapter—Finance.)

(g) *Ministry of Commerce and Industry*

(See Section 6 of this chapter.)

(h) *Ministry of Justice*

(See Section 4 of this chapter—Legal System.)

(i) *Ministry of Foreign Affairs*

This Ministry performs functions closely akin to those of the British Foreign Office. Included in its activities are—

Relations with all foreign countries and the League of Nations, the Permanent Court of International Justice, Treaties and Conventions: Trade Conferences and Congresses at home and abroad, Trade Advertisement and Tourist Traffic, relations with Egyptian representatives abroad and those of foreign countries in Egypt, ceremonial arrangements, matters dealing with foreigners in Egypt, naturalization and extradition.

(j) *Ministry of Public Instruction*

This Ministry is equivalent to the Ministry of Education in England and is responsible for all secular instruction in Schools. Further details will be found in Chapter III—Population, Section 6—Education.

(k) *Ministry of Public Works*

This Ministry is divided into Departments dealing with Irrigation, Basin Conversion, Reservoirs, Main Drainage, Mechanical and Electrical Projects, State Buildings, Tanzim (Municipal Services) and a "Physical" or Statistical Department.

For details of—

Irrigation	..	} See Chapter V—Physical Geography and Chapter XII—Navigable Waterways.
Basin Conversion	..	
Office.	..	
Reservoirs	..	

*The Mechanical and Electrical Department* controls the existing pumping stations in Egypt and is responsible for Hydro-Electrical schemes, etc. Under its control are the Government workshops, details of which are given in Chapter IV—Political Geography, Section 5—Principal Towns, Cairo.

*The State Buildings' Department* is in charge of the erection, the upkeep, alterations and additions to all Government buildings, except those of the War Office, State railways and customs. As a result of the economic development of the country during recent years, there has been a considerable expansion in the duties of this Department.

*The Tanzim Department* is responsible for municipal services in Cairo, such as alignment of streets, permission to build, examination of dangerous structures, housing and

town planning schemes, construction, maintenance and widening of streets within the municipal boundary, public lighting, water supply and tramways.

All the chief towns in Egypt are subject to Tanzim Regulations. The upkeep of roads and bridges, etc., outside the town comes under the Main Roads and Bridges Department of the Ministry of Communications.

*The Physical Department* is responsible for meteorological statistics, including river levels and estimates of water supplies, and for the Government Observatory at Helwan.

#### (l) *Ministry of Waqfs*

This Ministry, peculiar to Egypt, is charged with the administration of charitable funds, care of mosques and religious houses. It administers certain hospitals and schools, and by virtue of a responsibility for the religious training of priests and readers in Islamic Law, certain universities, the most important of which are the University of Al Azhar in Cairo and the University in Tanta.

A "Waqf" is an institution of Islamic Law similar to a trust in English Law. When property is made "Waqf," a dedication to some charitable or religious object is implied.

This Ministry is of military interest only on account of the opportunities which it affords for speculation causing repercussions in political circles.

#### (m) *Ministry of War and Marine*

The second part of the title is a misnomer, as the Minister is concerned only with the administration of land forces, namely, the Army (*see* Chapter XVII) and the Frontiers Administration (*see* Chapter XVIII). The Marine Forces are administered by the Ministry of Finance (*see* Section 5 of this chapter).

### 3. Local Government

Egypt, less Sinai and certain oases under the control of the Frontiers Administration, is divided administratively into five Governorates (Muhafzas) of principal towns and 14 Mudiryas or Provinces. Each Mudirya is governed by a Mudir responsible to the Ministry of the Interior.

The five Muhafzas and 14 Mudiryas, with the chief towns in each Mudirya, are given in Chapter IV—Political Geography.

Muhafzas are subdivided into Qisms, each under a Mamur, who is responsible for internal security and police matters only. Other local government matters are centralized under the Muhafzas.

Mudiryas are subdivided into districts (Markhaz), self-contained administrative sub-units with their own police, each under a Mamur, who controls the headman (Omda) of each village in his district and is responsible for the general local government of his district. *See also* Table on page 41.

Provincial Councils, as reorganized in 1909, have limited powers of local government, including the framing of bye-laws, authorizing public markets, fixing the pay and number of Ghaffirs (village watchmen), etc. They are the local authorities in connection with elementary vernacular education and trade schools. They consist of two elected members from each Markhaz. The Mudir is *ex officio* President of each Provincial Council.

In 14 towns (Alexandria, Mansura, Medinet el Faiyum, Tanta, Zagazig, Damanhur, Beni Suef, Mehalla el Kubra, Minya, Mit Ghamr, Zifta, Kafr el Zaiyat, Benha and Port Said), Mixed Commissions, composed of both Europeans and Egyptians in equal numbers, form the local Municipal Government. Such Mixed Commissions, except in the case of Alexandria, cannot levy municipal taxes on European residents except with their express consent.

The Municipal Commission of Alexandria in 1890 received from the European Powers permission to impose local taxation on all residents in the town.

In 56 other towns another form of local Commission exists, with four elected members only, foreign members not to exceed two in number, can be nominated at the discretion of the Central Government. These local Commissions have practically the same taxing powers as the Mixed Commissions mentioned above.

A third form of local Commission was formed in 1918—the Village Council—and exists now in 49 towns in Egypt. These are composed of four elected members only, but without any power of nomination of foreign members. They have, more or less, the same taxing powers as the Mixed Commissions.

The Central Government has complete powers of veto on all decisions of every form of Commission in Cairo.

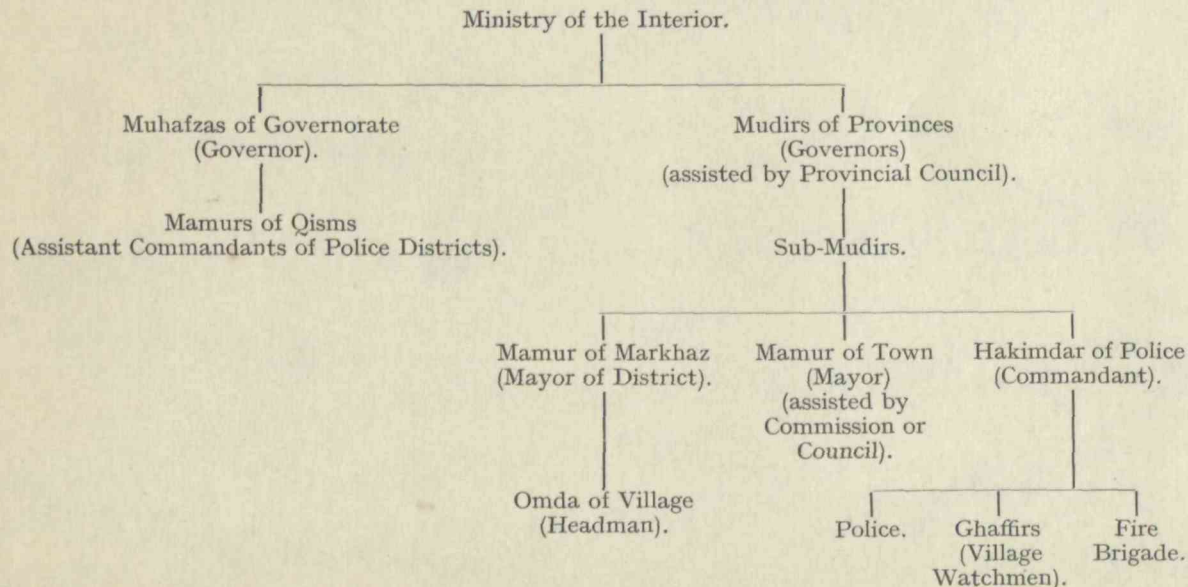
#### 4. Legal Systems

(Prior to the abolition of the Capitulatory System.)

##### (a) General

The administration of justice in Egypt is only partially under the control of the Ministry of Justice as, owing to the Capitulations, foreigners who are nationals of Powers

## Organization of Local Government



possessing Capitulatory rights are entirely outside the jurisdiction of the Native Tribunals as regards civil and criminal actions, which, in their case, are dealt with by the Mixed Tribunals and the Consular Courts respectively.

Under Article 13 of the Treaty of Alliance of 1936 it is recognized that the Capitulatory regime is no longer in accordance with the spirit of the times and the present state of Egypt. In the annex to Article 13 provision is made for the speedy abolition of the Capitulations and the institution of a transitional regime pending the abolition of the Mixed Tribunals. For full details see Appendix 6.

A British Judicial Adviser assisted the Minister of Justice prior to the ratification of the Treaty.

(b) *Administration of Justice as regards Egyptians*

As regards Egyptians, the administration of justice is under the direction of the Egyptian Minister.

There are two different systems of Courts—

*The Mahkama Sharia.*—Religious Courts which administer the law of Islam and deal with questions affecting the personal status of Mohammedans, marriage, divorce, succession, registration of title deeds, etc. The chief Court is in Cairo. Mahkama Courts are also held in each Mudirya and Markhaz.

Prior to 1883 these were the only native tribunals in the country.

*The Native Tribunals.*—In other matters natives are justiciable before the so-called Native Tribunals, established in 1883. The laws and procedure followed in these Courts are based on French Law. These now consist of—

(i) Ninety-three Summary Tribunals and four Judicial Delegations, each presided over by a single judge, with civil jurisdiction in matters up to £E.150 and criminal jurisdiction in offences punishable by fine and imprisonment up to three years, that is to say, police offences and misdemeanours.

(ii) Thirty-one Markhaz Tribunals sitting weekly in the Governorates of Cairo, Alexandria, Port Said, Suez and Ismailia, for the disposal of petty offences, the Judge having powers up to three months' imprisonment or fine of £E.10, the prosecution being conducted by the police. Of these tribunals, one in Cairo and one in Alexandria deal with offences committed by juvenile offenders.

(iii) Ten Central Tribunals or Courts of the First Instance, each consisting of three judges, which hear appeals from Summary Courts and deal with civil claims above £E.150. These are established at Cairo, Alexandria, Tanta, Shebin el Kom, Mansura, Zagazig, Beni Suef, Minya, Asyut and Qena.

(iv) The Courts of Appeal at Cairo and Asyut, which are the Supreme Courts, hear appeals from the Courts of the First Instance. The Court of Appeal in Cairo also sits as an Assize Court for serious offences.

(v) The new Court of Cassation, established in 1930, consists of ten judges, divided into two Chambers of five judges, one for civil and one for criminal cases, and is set over and above the Courts of Appeal.

(c) *The Parquet*

The functions of the Parquet are as follows :—

Parquet officials undertake all investigations in cases of crime and supplement the police investigations of misdemeanours when necessary. They finally deal with all crimes, misdemeanours and contraventions, either by filing them (for no crime, no importance, author unknown, etc.) or by sending them to the Courts. In the latter case, the Parquet acts as prosecuting authority before the Courts. The Parquet are expected to work in close touch with the Mudir or Governor who represents the administrative authority. But the two are entirely independent of each other and are responsible to different Ministries, *i.e.*, that of Justice on the one hand and of the Interior on the other.

There is a British Chief Inspector of Parquet in Cairo who concerns himself especially with offences committed by nationals against foreigners.

(d) *Administration of Justice as regards Foreigners*

A foreigner, being a national of a Power possessing Capitulatory rights, who commits a criminal offence, is tried by his Consul or, if his Consul is not competent, by the competent court of his own country in Egypt. Civil cases between foreigners of the same nationality are also tried by the Consular Courts.

Mixed Tribunals were instituted in 1876, with jurisdiction in civil matters between Egyptians and foreigners, and between foreigners of different nationalities. These tribunals have also a limited penal jurisdiction in cases of police

offences committed by foreigners and, in 1900, penal jurisdiction was conferred upon them in connection with offences against the Bankruptcy Laws. One-third of the judges are Egyptians and the remaining two-thirds are foreigners of different nationalities. There are three Mixed Courts of the First Instance, at Cairo, Alexandria and Mansura, with a Summary Court in each of the above-mentioned cities and one at Port Said, and a Court of Appeal sitting at Alexandria. The Summary Courts hear civil claims up to £E.100 and try all contraventions committed by foreigners. The Courts of the First Instance hear appeals and all civil claims exceeding £E.100.

By Decree of 10th February, 1905, these International Tribunals were to be continued for a term of five years and were subsequently renewed every five years. By Decree of 29th April, 1922, they have been renewed for no limited time except as regards Holland.

The official languages recognized by these Tribunals are English, French, Italian and Arabic. In fact, the proceedings are conducted in French.

The system of a separate system of judgment for foreigners will shortly come to an end under the terms of Article 13 and Annex thereto of the Anglo-Egyptian Treaty of Alliance 1936. See para. 4 (a) above and Appendix 6.

#### (e) *Committee of State Legal Department*

This Committee, an advisory body, was first instituted in 1876 and reorganized in 1923. Its duties are to advise the Government on legal points, on the phraseology of deeds, documents, draft laws, decrees, decisions, regulations, etc. It also conducts the defence of the interests of the Government and of public administration before the Courts.

## 5. Finance

### (a) *Ministry of Finance*

Besides regulating the finances of Egypt, the Ministry controls the Departments of Customs, Coastguards and Fisheries, Government Press and State Domains.

Egyptian finance generally, including revenue and expenditure, taxes, external debt and the activities of the Departments referred to above, are dealt with in subsequent paragraphs of this chapter, with the following exceptions: details of the Survey of Egypt will be found in Chapter IV—Political Geography; details of the guards maintained by the Customs and Coastguards and Fisheries Departments,

and the vessels maintained by the latter, are included in Chapter XVIII—Armed Forces and Uniformed Bodies other than the Egyptian Army.

(b) *Revenue and Expenditure*

During recent years they have been as follows :—

<i>Year.</i>	<i>Revenue.</i> £E.	<i>Expenditure.</i> £E.
1931-32	37,770,616	36,991,868
1932-33	37,139,881	35,946,856
1933-34	32,630,223	30,548,711
1934-35	33,715,907	31,600,252
1935-36	32,846,600	

The following are the estimated figures for the year 1936-37 :—

<i>Receipts, 1936-37.</i>		£E.
Direct Taxes (Land and House Taxes) ..		6,300,800
Customs (Customs Duty, Customs Duty on Tobacco and Excise) .. .. .		17,203,500
Ports and Lighthouses Dues .. .. .		315,000
Fisheries .. .. .		72,500
Stamp Duty .. .. .		474,000
Assay Dues .. .. .		11,000
Judicial and Registration Fees .. .. .		1,833,560
Government's share in E.S.R. Revenue ..		1,272,500
Government's share in Telegraphs and Telephones Revenue .. .. .		214,250
Post Office .. .. .		774,700
State Domains .. .. .		708,450
Military Exemption Fees .. .. .		60,000
Ghaffir Tax .. .. .		674,000
Pension Contributions .. .. .		600,000
Interest on Funds .. .. .		1,464,000
Miscellaneous Receipts and Dues .. .. .		1,823,000
School and Examination Fees .. .. .		545,000
Tax on Motor Cars .. .. .		260,000
Extraordinary Receipts—Sale of Land ..		137,000
Other Receipts ..		59,000
Share of Additional Dues on Tobacco which is to be allotted to pay the indemnities to local bodies for the suppression of the "octroi" (municipal tariffs) and other expenses .. .. .		351,000

*Total Receipts* .. £E.35,153,260

<i>Expenditure, 1936-37.</i>		£E.
Civil List and Household of H.M. The King		425,733
Parliament .. .. .		304,210
Council of Ministers .. .. .		16,295
Financial and Judicial Adviser's Offices ..		18,536
Ministry of Foreign Affairs .. .. .		256,126
Ministry of Finance .. .. .		3,706,841
Ministry of Commerce and Industry .. ..		291,813
Ministry of Education .. .. .		3,617,519
Ministry of the Interior .. .. .		3,977,250
Ministry of Public Health .. .. .		2,889,460
Ministry of Justice .. .. .		1,703,916
Ministry of Public Works .. .. .		6,874,710
Ministry of Agriculture .. .. .		932,544
Ministry of Communications .. .. .		1,812,794
Ministry of War and Marine .. .. .		2,082,063
Educational Mission .. .. .		100,000
Pensions and Indemnities .. .. .		1,865,315
Public Debt .. .. .		4,195,193
Farouk Institute .. .. .		12,000
Miscellaneous and Unforeseen .. .. .		67,724
<i>Total Expenditure ..</i>		<u>£E.35,150,042</u>

As will be seen from the above Tables, the principal sources of revenue are—

(i) Direct Taxes, such as the Land Tax, House Tax, and Ghaffir Tax.

(ii) Indirect Taxes, such as Customs and Tobacco Duties, Port Dues, etc.

(iii) Receipts from State-owned revenue-earning administrations, such as the railways, telegraphs, telephones and post office.

(iv) Stamp Duty, Judicial and Registration Fees, etc.

### (c) *Details of Taxation*

The imposition and collection of taxes is controlled by the Direct Taxes Administration. The total revenues collected by the Administration amount to about £E.12,000,000 annually.

In accordance with the Egyptian Constitution no tax may be modified, repealed or imposed except by a Law.

*Land Tax.*—This tax is paid on all privately-owned agricultural land. By Decree of 1899 the whole country was surveyed and the rate of tax was fixed on a basis of

28.64 per cent. of the rental value of the land. There is a definite rate fixed for each of the Hods into which each village is divided. Present rates vary between Pt. 14 and Pt. 104 per feddan and have been in force since 1912 and remain valid for 30 years.

By Decree of 1902 an extra charge was made for lands which obtained summer irrigation. The rate is Pt. 50 per feddan for land irrigated by free flow and Pt. 30 for land irrigated by lift.

The Land Tax is payable by instalments, varying for each Province and depending on the times when the principal crops are harvested.

*House Tax.*—This tax is charged on all buildings in large towns. The amount of the tax is one-twelfth of the annual rental value of the premises, except in Cairo, where it is one-tenth. Re-assessment is made every eight years. In Alexandria the administration and proceeds of the House Tax are entrusted to the Municipality.

*Cotton Tax.*—This tax was abolished in April, 1935. It was a duty on all cotton ginned in Egypt, except scarto (gleanings), fixed by a Decree of 1932 at Pt. 10 per kantar. The tax was collected by means of licences issued before the cotton left the factory.

*Ghaffir Tax.*—This is collected from occupants and owners of houses in all towns subject to the House Tax. The Ghaffir Tax is fixed at 20 per cent. of the amount of House Tax.

*Motor Tax.*—In 1934 a new tax was imposed on all motor vehicles. The collection of this tax presented considerable difficulty, and in 1935 a reduced Motor Tax on a simpler basis was introduced.

*Provincial Council Dues.*—Provincial Councils may impose temporary dues to be spent on public utility services. These dues usually take the form of a proportionate addition to the Land Tax, the rates varying in different districts between 10 and 15 per cent.

*Stamp Duty.*—The imposition of a Stamp Duty Tax is now (December, 1936) under consideration.

#### (d) *Criticism of Egyptian Internal Finance*

Compared with European countries, Egypt has enjoyed a singularly fortunate position as regards its national finances. Unencumbered by war debts or the necessity of raising large sums for national defence, the annual Budget problem has been a comparatively easy one. Now, with the

signing of the Anglo-Egyptian Treaty of Alliance of 1936, and the financial obligations originating therefrom such as the construction of roads, railways, etc., the problem is likely to prove a more difficult one. The incidence of taxation and disposal of revenue is open to the following criticisms :—

(i) As a result of lack of real representation in the councils of the nation, the burden of taxation falls in unfair proportion on the fellaheen, who have greater difficulty in paying the Land Taxes than do the townsmen in paying the House Tax.

(ii) The cost of the administration is excessive. The various Ministries house hundreds of junior officials with little work to do, whilst even senior civil servants spend their daily average of four or five office hours in contriving by every means to avoid taking responsibility. In return they receive salaries and pensions quite disproportionate to their activities or the general state of economic development of the country. The Egyptian Government machine appears to be designed and staffed not so much with a view to the duties it has to perform, but as a means of providing safe careers for the largest possible number of graduates of Egyptian schools. Whilst a Civil Service at a higher numerical level than in almost any comparable country is maintained, the living standards of the mass of the population are lower than almost anywhere else.

(iii) As a result of excessive centralization of the Government in the Capital, the Provinces are almost entirely neglected, and little is done to improve the amenities of village life by the provision of pure water supplies, etc.

(iv) For the above reasons there is a tendency to drift towards the towns, to the detriment of agriculture, in which the real strength of Egypt lies.

(e) *Public Debt*

The Caisse de la Dette is a body representing the creditors of the Egyptian Treasury, possessing considerable powers and privileges. The Caisse was originally created during an era of bankruptcy to protect the interests of foreign bondholders. As Egypt became solvent and prosperous, its duties were modified and are now limited to receiving the revenues necessary for the payment of interest as it becomes due, whilst it holds a considerable Reserve Fund, the interest on which reduces the amount of Treasury contribution.

On 1st May, 1935, the outstanding Egyptian Debt was as follows :—

	<i>£ Sterling.</i>
Guaranteed Debt, 3 per cent. . .	2,846,500
Privileged Debt, 3½ per cent. . .	30,633,980
Unified Debt, 4 per cent. . .	55,250,460

(f) *Customs Administration*

The Customs Administration has its central administration in Alexandria, under the Director-General of Customs, and has branches at Cairo (including Heliopolis and Almaza Airports), Port Said and Suez, under local Directors. There are also posts at Kantara (terminus of the Palestine Railway), Ismailia, Rosetta, Sollum, Mersa Matruh, Wadi Halfa, Hurghada, Kossier, Safage, Gimsa and El Arish.

The post at Wadi Halfa exists only for statistical control of the movement of goods and for the adjustment of accounts between the Egyptian and Sudan Customs. No duty is collected there.

The personnel of the Customs Administration averages 900 Cadre officials, including one English Inspector, 800 Hors Cadre officials and 700 Customs Guard under a Commander of Customs Guards.

The relationship between the Customs Administration and the British Military, Naval and Air Force Authorities in regard to imports by individual members thereof and by the N.A.A.F.I. is governed by the Provisional Agreement of 1921, under which goods imported by the above are admitted free of duty under certain conditions.

(g) *Coastguards and Fisheries*

This Department is controlled by a Director-General, with headquarters at the Governorate Buildings, Alexandria, and is divided into five Directorates, situated as follows :—

Western Directorate	Sidi Gaber, Alexandria.
Marine Directorate	General Building, Alexandria.
Fisheries Directorate	General Building, Alexandria.
Fisheries Research Directorate . .	Kaid Bey, Alexandria.
Eastern Directorate	Port Said.

The responsibility of the Service embraces :—

- (i) The prevention of smuggling in Egyptian Territorial Waters in the Mediterranean from Sollum to Rafa, and in the Suez Canal and Red Sea. The coast under the jurisdiction of the Department extends from a point five miles west of Agami (Alexandria) to Port

Fouad (Port Said), the western bank of the Suez Canal and three miles each side of the River Nile at Aswan and Qena for the prevention of Sudanese tobacco smuggling. The contraband traffic consists chiefly of hashish, cocaine, opium, heroin, tobacco, arms, ammunition, gunpowder and explosives.

(ii) Prevention of landing of undesirable persons and similar public security measures.

(iii) Control in the maritime zone of vessels which hold goods liable to Customs dues.

(iv) The enforcement of quarantine regulations where no official of that Department exists.

(v) The observance of the Fisheries Laws and the collection of fisheries taxes.

(vi) Fisheries research for the improvement of fish production in sea, lakes and rivers. A laboratory and aquarium is maintained at Kaid Bey, Alexandria.

For details of personnel, dispositions, sea-going cruisers, launches, transport, etc., see Chapter XVIII, Section "D."

*The Government Press.*—Details of its building in Cairo are given in Chapter IV—Political Geography, Section 5—Principal Towns, Cairo.

*The State Domains Administration.*—This Department deals with the administration and development of State lands.

## 6. Commerce and Industry

Prior to December, 1934, this Ministry was a Department established in 1920 in the Ministry of Finance. On 24th December, 1934, its status was raised by a Royal Decree to that of a Ministry, due, it was stated, to the necessity of developing the commerce and industry of the country and of fostering their closer co-ordination with agriculture, and in order that it might exercise a more effective and extended influence and give the requisite expansion to the political economy of the country. Following the creation of the new Ministry, the Egyptian Government decided to appoint a new British Economic Adviser with the result that Sir Geoffrey Latham Corbett, K.B.E., C.I.E., was selected for this post. He entered upon his duties on the 1st June, 1935.

Commerce is dealt with in Chapter XVI—Resources.

## CHAPTER III

## POPULATION

Census.

Races and Classes.

Egyptian, the fellaheen.

Origin and distribution. Physique and appearance.  
Dress. Occupation. Attitude to authority. Village  
life. Military value. Arms.

Egyptian, Effendi Class.

Origin and distribution. Characteristics and military  
value. Political outlook. Occupation and attitude  
to authority.

Egyptian, Pasha Class.

Egyptian, Copts.

Nubians or Berberin.

Sudanese.

Bedouin.

Characteristics. Physique, appearance and dress.  
Military values. Occupations and tribal distinctions.  
Delta and Faiyum. Northern littoral west of  
Alexandria. Eastern Desert.

## 1. Census

The last Census of Egypt, taken in 1927, showed a total population of 14,177,864, of which 13,952,264 were Egyptian subjects, and the remaining 225,600 foreigners.

The above figures point to a steady increase in the population, previous figures being as follows :—

1846 Census	..	..	..	4,476,440
1882	..	..	..	6,831,131
1907	..	..	..	11,287,359

Details by Provinces will be found in tabular form on page 68. It will be observed that these statistics show non-Egyptian subjects under the heading of their particular nationality, but no distinction is made between the various races and mixture of races of which the Egyptian nation is composed.

## 2. Races—General

The Egyptian nation of to-day consists of a medley of races, classes and creeds. This diversity may be traced to a continuous history of foreign invasion and penetration. The rich soil, good climate and accessibility of the Nile

Valley and Delta have offered ample inducements to soldier and trader alike. Their descendants have, in many cases, remained in the country and inter-married with other races to produce fresh types with common characteristics, chief amongst which are the fellaheen or agricultural class and the Effendi or townsman type. The common labourer of the town resembles the fellaheen type and dresses somewhat similarly, though there are distinctions according to occupation and district.

The racial element is represented by Arab-Egyptian, Copts, Jews, Turks, Negroes, Nubians or Berberin, Abyssinians, Armenians, Syrians and Bedouin, though racial characteristics are preserved in a varying degree. Generally speaking, Moslems, who outnumber the adherents of other faiths in the proportion of 13 to 1, tend to merge, and persons of other religions, particularly the Jews, to maintain their racial characteristics, but there is no golden rule. Environment and occupation have their influence. The Bedouin of the desert and oases remain a type altogether apart from the settled population; to some extent, the Berberin also maintain their identity. The Coptic Community, whilst retaining their ancient Christian faith, differ little in general outlook and appearance to townsmen of other religion and origin.

### 3. Races and Classes. Distribution, Characteristics, Physique, Military Value, Pursuits and General Mode of Living

#### (a) **Egyptian. The Fellaheen.** (Fallah = to plough.)

*Origin and distribution.*—The fellaheen, or peasantry, who may also be termed the Arab-Egyptians, form the bulk of the population of Egypt. They are descended from the Arab tribes which settled in Egypt soon after the conquest of the country by Amr, the Commander-in-Chief of Omar, the Khalifa, in the 7th Century A.D. These tribes married among the indigenous people and their offspring, most of whom embraced Islam, resemble in many particulars the Ancient Egyptians. They now form the agricultural population of the whole Nile Valley and Delta.

*Physique and appearance.*—Arab-Egyptians are usually of good physique and in mature age most of them are remarkably well proportioned; the men are muscular and robust, the women well formed. In Cairo and the northern Provinces they have a yellowish but clear complexion, but further south they are considerably darker. Fellaheen are generally clean-shaven with the exception of the

moustache, which is nearly always allowed to grow, and, as a rule, shave all the hair or leave only a small tuft, called "Shushba," upon the crown of the head.

*Dress.*—The dress of the fellah consists of a pair of drawers ("libass") and a long gown or "gallabia" of linen or cotton, generally white or blue. For head-dress the richer fellaheen sometimes wear the red tarbush, but the fellaheen are generally seen wearing cotton or woollen skull-caps (takieh), round which is sometimes wound a turban. In winter a thick cloak is often worn and the head is swathed in a long shawl worn like a turban. The dress of both men and women in Egypt, as elsewhere, varies according to their means and individual fancies. Most of the women of the lower classes wear a number of cheap ornaments.

*Occupation.*—The fellaheen, whether landowners or labourers, usually lead hard lives. Their hours of work are from sunrise to sunset and their earnings are small. The true fellaheen of the country do not as a rule lack for subsistence, as they produce their own foodstuffs, but the majority are forced to live on a very meagre scale. The women work even harder than the men, as they have to prepare and cook the food, bring water from the river, make the fuel, which is composed of dung and chopped straw called "gilla," as well as assist in work in the fields. Formerly they had to make the linen or cotton cloth required by the family, but most of this is now purchased in the bazaars. Details of the seasons when crops are sown, cut and stored will be found in Chapter XVI—Resources.

*Attitude to authority.*—In normal times the fellaheen are too preoccupied with their struggle for existence to concern themselves with political matters, and their general attitude towards government is one of apathy. At the present time (1937) the incidence of taxation in Egypt falls heavily on the fellaheen, who are exploited by the land tax to a degree which compares unfavourably with the treatment meted out to the salaried officials and traders of the town. In return the Government make little use of the revenue to ameliorate the lot of the villager, and the supply of pure water and other sanitary measures is entirely lacking. The apathy of the fellaheen is, however, at all times liable to be ruffled by family feuds over land boundaries and animal ownership, and such quarrels frequently lead to loss of life, more especially in Upper Egypt.

*Village life.*—Every available square inch of the irrigated areas of Egypt being under cultivation, isolated houses are seldom seen and the fellaheen live in villages, consisting

mainly of low, square, flat-roofed mud houses, with occasionally a few more substantial stone or brick buildings and the inevitable mosque to break the regularity of outline. The houses are huddled together, the streets are narrow, rough and tortuous alley ways, often blocked by debris or manure heaps, and, except in the case of main roads which happen to traverse a village, generally insufficiently wide to admit the passage of an armoured car or motor vehicle of any description. The average village is surrounded by palm trees, giving a degree of shade to man and beast, but otherwise there are no amenities whatsoever and sanitation is non-existent. Filth is indescribable, but as a result of generations domiciled under such conditions, a considerable number of the inhabitants appear to thrive and can drink the local water with impunity.

Such villages are extremely vulnerable to both air bombardment and artillery fire, the effect of which would be accentuated by the fact that the flat roofs are used as a depositary, according to the season of the year, for maize-straw, cotton and other crops of a highly inflammatory nature. In fact, village fires, causing widespread destruction of human life and houses, are of frequent occurrence. On the other hand, the hard mud walls are calculated to give fair protection against small arms fire and the density of the buildings in a compact space add to the degree of protection afforded.

The above description of a typical Egyptian village is also representative of the conditions pertaining in the undeveloped native quarters of the towns.

*Military value.*—The fellah makes a smart soldier, both in drill and turn-out. He possesses powers of endurance and marches well, with the loping individualistic gait of the northern African, and familiar to those who saw French Colonial troops on the Western Front in the Great War; whether he has the moral qualities necessary to endure the stress of modern artillery bombardment remains to be proved. His qualities in this direction have not been subject to test. A brief description of the quality shown by the Egyptian soldier in recent campaigns will be found in Chapter XVII—Egyptian Army, Section 1—History.

*Arms.*—Certain fellaheen of the towns, in spite of laws and regulations, possess revolvers, mostly stolen. In the country districts some possess shot-guns but, generally speaking, few are armed and nearly all Egyptian-owned fire-arms

deteriorate in condition. The fellah is, however, generally seen carrying a stout stick (nabout) which he does not hesitate to use in argument.

**(b) Egyptian. The Effendi Class**

*Origin and distribution.*—The title "Effendi" did not originally denote a class distinction, but was simply the Egyptian equivalent of the British "Mr.". The word is now used in British circles in a wider sense to designate the better class townsman as opposed to the labourer, and the Effendi class is now in customs and habits quite distinct from the other inhabitants of Egypt. Included in this class are the offspring of marriages between members of nearly every European nation and Egyptian and Nubian women, the colour of their skins varying from a dark brick-red to a European pallor. In Cairo, Turkish blood is strongly represented in this class; in Alexandria there are strong Greek and Italian elements.

*Characteristics and military value.*—Speaking generally, the Effendi has but a veneer of education. He attempts an occidental mode of life and wears European dress, retaining, however, the tarbush as his head-dress. His military value need not be considered, as the laws of Egypt allow sufficient latitude for him to escape compulsory military service. He makes a useful clerk and usually speaks at least one European language. He should not as a rule be employed on confidential work as his moral standards and outlook differ largely from our own.

*Political outlook.*—Townsmen of the Effendi class have a strong political consciousness, especially in the younger generation. In normal times this tendency is displayed by frequent student strikes, often over trivial matters. The Egyptian agitator usually derives from this source. In the past, at times when national feeling has run high and shown a strong anti-foreign bias, the most dangerous terrorist and murder gangs have been mainly composed of persons of this type. The automatic pistol has been the favourite weapon employed.

*Occupations and relations to authority.*—There is no hard-and-fast dividing line between the Effendi and upper class Egyptian of somewhat wider outlook described in sub-para. (c) below, and it may therefore be said that the Effendi class embraces skilled artisans, traders, clerks, members of the learned professions, etc. Government

employment is regarded as an ideal existence and, as a natural corollary to the influence of the Effendi class in political affairs, Government offices are over staffed and officials are paid on a high scale relative to work done and the general state of economic development of the country. Taxes fall lightly on the Effendi class and, whilst this state of affairs continues to exist, the relations of this class to Egyptian authority are likely to remain law-abiding, the first loyalty of the Egyptian being to the source from which his pay is derived. (*See also Chapter II, Section 5 (d).*)

Feeling towards foreigners, and consequently towards Government action, believed to be inspired by British influence, is another matter. (*See Section 9 of this chapter.*)

**(c) Egyptian. The Pasha Class**

The above term is used for lack of a better to denote the upper-class Egyptian, the class to which the bulk of politicians, higher Government officials and large land-owners belong. Like the Effendi class, such persons are generally of mixed origin, though Turkish strains predominate. Included in this class are persons of considerable education and linguistic accomplishment. Though their outward mode of life conforms mainly to European standards and their manners and courtesy appear delightful, persons of the Pasha class remain oriental at heart and engage in politics and business with proverbial eastern cunning and duplicity.

From the younger sons of this class are drawn the bulk of the officers of the Egyptian Army. Their military value is difficult to assess, but generally speaking the purer the strain of Turkish blood the stronger the military qualities of bravery, determination and powers of leadership, and, incidentally, the more Anglophile their tendencies.

**(d) Egyptian. The Copts**

The Copts are the direct descendants of the Ancient Egyptians and inhabit chiefly the cities of Upper Egypt. They belong to one of the oldest Christian Churches. They number nearly one million and most of them are engaged in the trades of goldsmith, cloth-worker, etc. A large number of clerks in the postal, telegraph and Government offices in Egypt are drawn from this community. There are a few officers and soldiers in the Egyptian Army of Coptic origin. They conform to the standards of other Egyptian classes of similar social standing.

(e) **The Nubians or Berberin**

The Nubians or Berberin are mainly domiciled in the Province of Aswan. They are for the most part small landowners. It is from this race that the majority of cooks, waiters and doorkeepers (boab) are drawn. They emigrate to Lower Egypt in large numbers in search of domestic employment, but usually return to their villages in their old age. On the whole they are more trustworthy than Egyptians and make better servants. They are completely lacking in ambition. They speak a language which is allied to some of the North African tongues and seldom speak Arabic well.

(f) **Sudanese**

Sudanese actually domiciled in Egypt are not of the fighting tribes. Their characteristics, employment and habits are very akin to those of the Nubians. The Frontiers Administration employ Sudanese of the fighting tribes in the Camel Corps and Car Patrols. They are mostly from the Shigaya and kindred tribes. They are amenable to discipline, good shots, hardy and make first-class soldiers. They are Mohammedans by religion.

(g) **Bedouins.** (Arabic—Singular, Bedawi ; plural, Bedu.)

*Characteristics.*—The Bedu or Arabs of the desert are of two different types—

(i) The Arabic-speaking tribes who have probably immigrated from Syria and Arabia, and who occupy the deserts as far south as latitude 26° N.

(ii) The tribes who occupy the Eastern Desert between Kossier, Suakin and the Nile, namely, the Hadendowa, Bisherin and Ababda tribes, who speak a language of their own and are probably descendants of aboriginal tribes.

The main characteristics of the two types are, however, the same and include both vices and virtues.

The Bedawi is a nomad by nature and generally in habit. He abhors discipline of any sort and admires physical endurance, strength and courage. He despises a townsman and tends to deteriorate morally himself under town conditions of life. He is cheerful, courteous and intensely hospitable, lazy, ignorant and dirty. He is treacherous and cruel, and murder amongst the Bedu is a common affair. In fact, the right to murder for revenge is recognized amongst them.

The Bedu are Mohammedans by religion, but are somewhat lax in their observance of the tenets of that faith, and have many laws and customs peculiar to themselves.

Their system of justice is founded on old tribal customs and natural laws. A brief description of Arab Laws and Customs will be found in Chapter VII—Sinai, Section 2.

*Physique, appearance and dress.*—The true Bedu is small and wiry and lacks the physique of the fellah or Arab-Egyptian. Both constitutionally and by nature he is unsuitable as a labourer. His dress, which is quite distinctive, consists of a head-cloth (kufrah), with which is worn a rope ring (agal) and a loose "galabiah." In winter the "abayah" or coarse camel-hair cloak is worn. (See also Chapter VII—Sinai, Section 3.)

*Military value.*—Bedu tribes, being quite lacking in the sense of discipline, are useless as regular soldiers. They would make good scouts or irregulars if led by men who speak their language, understand their habits, respect their customs and themselves display the qualities of physical courage which the Bedu so much admires.

Most of them possess old swords and some primitive fire-arms.

Hitherto the Bedouin population of Egypt have been exempted from military service, but this privilege may be removed by new legislation. A draft to this effect has been prepared but it is not yet known whether it will be passed. Several Bedouin deputations have been made, both to the Government and to the King, asking that the privileges granted to them by Mohammed Ali should be retained.

*Occupations and tribal distinctions.*—Sinai is the habitat of the most characteristic Bedouin tribes of Egypt, and as these are of some military interest, they are described in detail in Chapter VII—Sinai. A brief description of the Bedouin tribes of Egypt will suffice.

*Delta and Faiyum Province.*—The Bedouin wearing the traditional dress encountered on the roads are usually visitors from Sinai engaged in their normal occupation of camel trading. A few Bedouin are engaged in the horse trade and as trainers.

On the fringe of the cultivation, especially in Beheira Province and the Faiyum, a number of Bedouin are now settled on the land and may be regarded as being in the transition stage from Bedouin to fellaheen. To a large

extent they maintain their tribal characteristics and dress, and through lack of industry and other causes their land is generally of the poorest quality.

*The Northern littoral west of Alexandria.*—The majority of the tribes of Bedouin origin are now settled and village dwellers. Some wheat and barley is grown. There remains a certain nomadic population, mainly offshoots of the Aulad Ali tribe. In the past, these nomadic tribes moved freely along the Libyan and Cyrenaican coasts in search of pasture for their flocks. Movement is now restricted by the barbed wire barricade built by the Italians along the frontier from the coast near Sollum to Jerabub and, as a result, there is liable to be considerable distress amongst the Bedouin in years when the rainfall within Egyptian territory is scanty. When faced by such conditions, the Bedu will accept work normally abhorrent to him rather than starve. In 1935 such conditions prevailed and the Frontiers Districts Administration of the Egyptian Government provided relief work by hiring Bedouin to work on the coastal track from Alexandria to Mersa Matruh.

Further details of the Bedu population of the Western Desert will be found in Chapter VI, Section B. It should be noted that the inhabitants of the various oases are not necessarily of Bedouin origin.

*Eastern Desert.*—The Arab population is so small as to be almost negligible. They live by breeding camels, sheep and goats, in conducting caravans from the Nile Valley to the mines and vice versa, and by acting as camel contractors to mining companies, prospectors and survey parties. The coastal tribes make a bare living by fishing. Those resident in Kosseir are mostly employed by the Phosphate Company.

#### 4. Religions

The following statistics are based on the 1927 Census :—

Moslems .. .. .	12,929,260
Christians .. .. .	1,181,910
Jews .. .. .	63,550
Other religions .. .. .	3,144
Total .. .. .	14,177,864

It will be seen from the above that the Mohammedans outnumber the remaining religions by nearly 13 to 1.

The Christian Community is further subdivided as follows :—

Orthodox.					
Copts	..	..	..	870,877	} 999,170
Greeks	..	..	..	158,476	
Armenians	..	..	..	17,145	
Others	..	..	..	2,672	
Catholic.					
Copts	..	..	..	24,015	} 116,660
Romans	..	..	..	64,627	
Greeks	..	..	..	15,982	
Maronites	..	..	..	6,729	
Armenians	..	..	..	3,417	
Chaldeans	..	..	..	297	
Others, mostly Syriacs	..	..	..	1,593	
Protestants.					
Copts	..	..	..	51,501	} 66,080
Church of England	..	..	..	8,660	
Others, mostly Presbyterians	..	..	..	5,919	
					1,181,910

There are Christian Missionary establishments in many towns in Egypt which do excellent work among the poor, by running hospitals, clinics and schools. There is periodic agitation against the presence of foreign missions.

The number of Moslems converted to Christianity is infinitesimal.

*Islamic Religious Institutions.*—The chief Islamic religious authorities in Egypt are Sheikh el Gami el Azhar and Mufti el Di-yar el Masriya.

There are seven Islamic Institutions, of which El Azhar at Cairo is the largest and most important. The others are at Alexandria, Tanta, Asyut, Disuq, Damietta and Zagazig. Each Institution is managed by a Rector and there is in addition an assistant Rector at El Azhar.

For details of the Ministry of Waqfs, see Chapter II, Section 2 (I).

### 5. Languages. Interpreters

The Arabic language is spoken throughout Egypt, though the dialect varies in different parts. The written language is difficult to master owing to its enormous vocabulary. Few Englishmen ever become fluent in it and the majority content themselves in learning the comparatively easy-spoken Arabic of the fellah, which consists of a small vocabulary strung together with very little regard to grammar.

In Cairo, Alexandria and the larger towns, French, English, Italian and Greek are commonly spoken. Turkish, too, is occasionally met with, especially in Cairo and Alexandria.

Most Levantines speak at least one language beside their own, and from such people there is no difficulty in obtaining the services of interpreters competent in three or four languages.

## 6. Education

Secular education is in the hands of the Ministry of Public Instruction. This Ministry has under its direct control a considerable number of elementary and primary schools, secondary schools and teachers' training colleges. Grants in aid are also made, subject to certain conditions and satisfactory level of efficiency, to private secondary schools, technical and higher colleges. Under the control of the Provincial Councils, but under regular inspection by the Ministry, are over 1,700 more elementary vernacular schools or "maktabas."

Undoubtedly during the past twenty years serious efforts have been made to encourage education amongst the fellaheen and literacy is steadily increasing. In 1917, out of a total population of 12,750,918, only 1,007,314 were literate. In 1927, out of a total of 14,177,864, the number of literates had risen to 1,670,895. 82 per cent. of these were males.

A considerable number of British teachers, both male and female, are employed under the Ministry of Public Instruction, and representatives will be found in all the principal towns.

The younger generation in Egypt shows great keenness in education. Like all Orientals, the Egyptian learns his lessons parrot fashion, without really understanding what he has been taught. For this reason he should not be employed in any work where he will have to think for himself. He can, however, be trusted to carry out routine work with machine-like regularity.

It is an unfortunate sequel to education in Egypt that, as a rule, the educated son of a fellah will despise his father and his father's occupation. Most boys leaving school try to be doctors, lawyers or Government servants. Very few return to the land.

The Egyptian University at Giza (Cairo), also under the Ministry of Education, provides the highest type of education available in the country. Founded in 1908, this university includes Faculties of Arts, Science, Law and Medicine.

A certain number of the sons of the wealthy seek education in schools and universities abroad.

The schools and universities administered by the Ministry of Waqfs also make their contribution to the general progress of learning.

## 7. Labour

The Upper Egyptians, or Saidis, are by far the easiest class of labourer to enlist. The basin system of irrigation in use south of Cairo entails the land lying fallow for a large portion of the year. Large numbers of Saidis can then be hired. The best period for hiring them is between November and March. The Saidi is a very strong, hard-working labourer, but is purely animal in habits and outlook, quarrelsome, and apt to use his knife to enforce his opinions.

The Lower Egyptian is a more phlegmatic type. As he can till his land all the year round he is less ready to engage in outside labour. The offer of a good wage will, however, attract large numbers of good workmen throughout Egypt. Natives are usually accustomed to work in gangs under headmen. Each man brings his own fass—a rough triangular blade about a foot from apex to hypotenuse, attached to a long handle. Any other tools would have to be supplied, but for ordinary work a fass will suffice.

The normal wage throughout Egypt is four to five piastres a day, which covers work and subsistence. Labourers generally ration themselves and it is therefore seldom necessary to make rationing arrangements for work in the cultivation. Where food is scarce or unobtainable, as in the desert, the question of supply would require careful consideration. This is especially true as regards water. The fellah is probably the greatest water drinker in the world.

“During the War, the Camel Transport Corps and the Egyptian Labour Corps were enlisted for work in Palestine. The Camel Transport Corps attracted a very good class of fellah and Nile Valley Arab, and their efficiency in keeping touch with the fighting patrols was the admiration of the whole force. They were frequently under fire and, although a quite undisciplined and irregular force, they carried on stolidly.

The Egyptian Labour Corps, recruited from the fellaheen of the Nile Valley, who are without question the hardest-working race in the world, put in a cheerful ten-hour day of unremitting toil, whatever the weather, and were solely responsible for the marvellous rapidity

with which the railway and pipe-line kept in touch with the advancing troops."—*Yesterday and Today in Sinai*.  
C. S. JARVIS.

### 8. Diets and Rations

The normal food of the fellah consists of lentils, maize or millet, bread, milk, new cheese, salted fish, cucumbers, melons, gourds, onions and other vegetables, in quantity according to means. The ears of maize are often roasted and eaten; among the poorest of all, rice is rarely seen, and meat never. Nearly every man smokes. All are great water drinkers.

The following are statistics of accepted rations:—

(a) The Egyptian Army soldier's daily ration is—

Bread	.. 33 ozs.	Lentils	.. 4 ozs.
Rice	.. 2 ozs.	Meat	.. 4 ozs.
Butter	.. $\frac{1}{2}$ oz.	Onions	.. $\frac{1}{2}$ oz.
Salt	.. $\frac{1}{2}$ oz.	Soap	.. $\frac{1}{2}$ oz.
Wood	.. $\frac{1}{2}$ oz.	Coal	.. 5 ozs.
Vegetables	.. 5 ozs.		

or 8 ozs. Potatoes, 3 ozs. Local beans, or 3 ozs.

European beans with  $\frac{1}{4}$  oz. Sauce.

The price of this ration is 25 mills. (12 mills. for the bread and 13 mills. for the remainder).

(b) The ration for a man undergoing imprisonment with hard labour is—

Bread	.. 33 ozs.	Salt	.. $\frac{1}{2}$ oz.
Beans	.. 3 ozs.	Meat	.. $9\frac{1}{2}$ ozs.
Vegetables	.. 4 ozs.	Onions	.. $\frac{1}{2}$ oz.
Oil	.. 1 oz.	Spice	.. $\frac{1}{2}$ oz.
Rice	.. 1 oz.		

The cost of the ration is 16 mills.

(c) Diet suitable for adult men employed as labourers—

Bread	.. 28 ozs.	Semna (clarified butter used for cooking)	.. 5 ozs.
Oil	.. $\frac{1}{2}$ oz.	Salt	.. $\frac{1}{2}$ oz.
Meat (without bone)	.. 4 ozs.	Meat (with bone)	.. 5 ozs.
Rice	.. 2 ozs.	Lentils	.. 2 ozs.
Beans (dried)	2 ozs.	Onions	.. 1 oz.
Fresh vegetables or salad	.. 5 ozs.		

The cost of the above should not exceed 20 mills. a day. In practice it is generally better to pay the labourer in cash and allow him to ration himself.

### 9. Attitude of Egyptians towards Foreigners

In general, Egyptians dislike all foreigners, but have a certain amount of covert admiration for the British, whose integrity and courage they respect, and British advisers are preferred to those of other European nations. Since agreement was reached on the Anglo-Egyptian Treaty of 1936, this admiration of British character and British institutions has been more freely expressed, both in the public utterances of prominent politicians and in general Press comment.

Nationalist feeling is deeply rooted in the minds of the educated classes, but it is a feeling mainly inspired by vanity, and thinking persons appreciate that British and Egyptians have many common interests. It is widely recognized amongst such persons that there is no advantage to be gained by a complete severance of the British connection, and now that formal tribute has been paid to the outward forms of Egyptian independence by a Treaty signed on terms of equality, there are grounds for hope that extreme expression of nationalism will tend to diminish.

In the past few years the political situation has been such that few individuals have had the courage to express their real feelings, however Anglophile they may have been at heart. This especially applies to members of the Coptic Community. Fear of their Moslem neighbours has made them adepts at dissimulation, and the public utterances of Coptic politicians have been calculated to give the false impression that they are amongst our bitterest antagonists.

Nationalist feeling being based more on vanity than on a genuine desire to stand alone, it has often been possible in the past to guide Egyptian policy on lines favourable to our mutual interests by tendering advice in an unobtrusive manner, leaving the credit for action taken to the Egyptian executive. There is no reason to think that the signing of the Treaty will alter this state of affairs provided there is no interference with purely domestic matters.

Similar consideration should continue to influence the relations of British officers to individual officials, who will be found responsive to the common courtesy to which their position entitles them. As a rule, such officials are not men of initiative, but will accept advice and act on it if they are sympathetically and tactfully handled and, to borrow a common expression, not made to "lose face."

As regards the Egyptian attitude towards other foreigners, those of the Northern European races are respected as private individuals in the same way as the British, but having no influence on the life of the country, excite little interest. As regards the Latin races, Egyptian upper-class society has some admiration for French culture and the French language is still more freely spoken in these circles than English. Italians and Greeks resident in Egypt, especially the lower orders, are more inclined to merge in Egyptian life than the nationals of other European powers. Though this tends to diminish their national prestige, it provides some scope for influence in domestic and commercial matters, which in the case of the Italians is fully realized and encouraged by their Home Government. Egyptian public opinion is generally anti-Italian, and this was very obvious during the early stages of the Italian campaign in Abyssinia of 1935-36. The unexpected rapid victory of Italian arms caused a somewhat marked reaction, and a school of thought arose in Egypt which argued that in future it would be politic to adopt a more conciliatory tone to a nation whose progress and virility appeared to have been underestimated. As the Egyptian Army is strengthened under the advice of the Military Mission, it is to be hoped that this feeling, which rests on a basis of fear, will become less noticeable.

The lower classes are quick to appreciate firm but fair treatment. They love a joke and, once made to smile, they are not difficult to lead. Avaricious by nature, their cupidity is aroused if overpaid for services rendered and further demands are liable to be made on what appears to them an unfailing source of wealth. As in the past shooting parties have often given rise to "incidents" between British officers and fellaheen, the above advice may well be heeded by future organizers of the same.

The Arabic Press does not as a rule reflect public opinion, but each paper attempts to mould it in the interests of the political group which it represents. Prior to the Anglo-Egyptian Treaty discussions of 1936, any Arabic journal was liable to be suspect in Egyptian eyes unless it gave open proof of its patriotism by a policy of uncompromising hostility to the British. Since agreement was reached, this attitude has diminished considerably and the tone of the Press has been friendly. At times in the past, however, even when there has been no special anti-British feeling amongst the Egyptian people, a study of the vernacular Press by an individual unversed in Egyptian affairs would

be calculated to give the impression that relations were strained to bursting point. The result was as might be expected; frequent repetition of the tale of woe against British machinations and schemes, with no regard to justice and reality, was causing it to lose its sting and it was becoming increasingly difficult for the Arabic Press to rally the nation to its slogans. With the Treaty a reality and a distinct diminution of these fulminations, the Press to-day probably represents public opinion more exactly than at any other period in the past 20 years.

There is always some danger of anti-foreign feeling threatening public security breaking out in the towns, and the activities of Youth Societies and Labour organizations are to be watched in this respect, but widespread nationalist feeling requires a suitable breeding ground. In times of economic stress the fellaheen are too preoccupied with their fight for existence to participate in anti-foreign movements. It is in time of prosperity that danger arises. With money in his pocket the fellah is prone to follow the leadership of anti-foreign agitators of the Effendi class, less from conviction of the merits of the cause than from a carefree thirst for excitement. In this respect the Egyptian differs from the majority of Orientals, who are apt to be most dangerous in times of depression.

#### 10. Foreign Colonies and Residents

The Foreign population of 225,600 (1927 Census) includes—

Greeks ..	76,264
Italians ..	52,462
British ..	34,169 (excluding British Troops).
French ..	24,332
Asiatics ..	10,323
Turks ..	9,284
U.S.A. ..	1,636
Others ..	17,130

The above figures include many foreigners, mainly Italian, Greek and Turkish, resident in the larger towns and seaports, who have been domiciled in Egypt so long that all trace of European nationality has disappeared from the habits and features. In spite of this, these classes cling to their European status and make use of it to lodge complaints with their respective Consuls and claim exemption from the taxes, laws and punishments inflicted

on their Egyptian neighbours. Resident in the native quarters of their towns, such people are liable to be a cause of anxiety in times of internal disorder, being difficult to protect and in themselves a potential source of trouble.

On an estimate compiled in 1935-36 of the local Italian population mentioned above, there were some 16,000 male "effectives" distributed as follows (figure approximate) :—

Cairo .. .. .	5,000
Alexandria .. .. .	7,000
Canal Zone .. .. .	1,200
Elsewhere .. .. .	2,800
	<hr/>
	16,000

# TABLE OF NATIONALITIES BY PROVINCES

*Compiled from the Census Return (1927)*

Governorates and Provinces.	Egyptian Subjects.	Greeks.	Italians.	British.	French.	Asiatics.	Turks.	United States of America.	Miscellaneous Foreigners.	Totals.
<i>Governorates—</i>										
Alexandria ..	473,458	37,106	24,280	14,394	9,429	3,261	4,322	312	6,501	573,063
Cairo ..	988,394	20,115	18,575	11,221	9,549	4,763	3,877	864	7,209	1,064,567
Canal ..	110,183	6,831	5,180	4,122	1,871	506	94	53	957	129,797
Damietta ..	34,833	32	12	9	8	7	5	—	1	34,907
Suez ..	34,800	2,045	1,273	1,360	284	158	42	2	559	40,523
<i>Frontier Districts—</i>										
Red Sea ..	4,970	11	87	72	—	16	—	2	19	5,177
Sinai ..	14,753	46	16	85	14	133	3	2	7	15,059
Southern Desert	25,396	—	—	—	—	—	—	—	—	25,396
Western Desert..	48,531	124	164	29	71	3	24	—	10	48,956
<i>Provinces of Lower Egypt—</i>										
El Beheira ..	974,195	564	764	359	621	217	113	2	130	976,965
El Daqahliya ..	1,077,380	1,734	381	271	304	303	83	15	222	1,080,693
El Gharbiya ..	1,787,197	2,776	362	357	596	223	182	29	263	1,791,985

TABLE OF NATIONALITIES BY PROVINCES—*contd.**Compiled from the Census Return (1927)—contd.*

Governorates and Provinces.	Egyptian Subjects.	Greeks.	Italians.	British.	French.	Asiatics.	Turks.	United States of America.	Miscellaneous Foreigners.	Totals.
<i>Provinces of Lower Egypt—contd.</i>										
El Minufiya ..	1,104,412	570	25	57	68	25	7	—	27	1,105,191
El Qalyubiya ..	557,743	605	87	137	88	104	44	11	57	558,876
El Sharqiya ..	1,014,255	1,392	148	340	329	209	131	7	101	1,016,912
<i>Provinces of Upper Egypt—</i>										
Aswan .. ..	266,608	96	51	209	81	17	15	56	224	267,357
Asyut .. ..	1,077,639	334	110	187	104	76	28	84	38	1,078,600
Beni Suef ..	507,452	361	74	62	97	30	31	3	56	508,166
El Faiyum ..	553,427	170	150	38	155	21	23	9	47	554,040
Girga .. ..	968,134	117	23	33	30	18	9	1	18	968,383
El Giza .. ..	589,327	354	389	402	276	138	178	31	296	591,391
El Minya ..	838,288	672	184	112	193	50	54	4	133	839,690
Qena .. ..	900,889	209	127	313	164	45	19	149	255	902,170
Total .. ..	13,952,264	76,264	52,462	34,169	24,332	10,323	9,284	1,636	17,130	14,177,864

## CHAPTER IV

**POLITICAL GEOGRAPHY**

(Reference Map No. 1, and Town Plans of Cairo, Alexandria, Port Said and Suez.)

General Description of Country.

Administrative Divisions.

Governorates. Provinces. Frontier Provinces and Districts.

Frontiers.

Maps and Mapping.

Surveys of Egypt. G.S.G.S. Maps.

Principal Towns.

Explanatory Notes. Cairo. Remainder in alphabetical order.

**1. General Description of the Country**

The territory of Egypt comprises :—

(a) Egypt proper, including the cultivated districts of the Nile Valley and Delta, the Libyan or Western Desert, and the Arabian or Eastern Desert.

(b) Sinai.

(c) A number of islands in the Gulf of Suez and the Red Sea, of which the principal are Jubal, Shadwan, Gifatin and Zabergal or St. John's Island.

The total area of Egyptian territory is about 600,000 square miles. Of this, however, only 18,000 square miles, or less than one-thirtieth of the whole, is able to be cultivated or is capable of supporting a fixed population. The remainder consists of desert lands very sparsely inhabited by nomad Arabs.

Cairo, the capital, situated on the River Nile, is the largest city in Africa and the seat of the Egyptian Government.

In summer months the heads of Government Departments move to Alexandria, the second town of importance.

**2. Administrative Divisions**

For the purpose of administration, Egypt is divided into the following five Muhafzas or Governorates, 14 Mudiryas or Provinces, and four Desert Provinces or districts under the control of the Frontiers Administration.

(a) **Muhafzas or Governorates**

Cairo.

Alexandria.

Suez Canal, comprising the towns of Port Said, Ismailia, and the narrow causeway connecting them which lies between the Suez and Sweet Water Canals.

Suez.

Damietta.

(b) **Mudiryas or Provinces**

(i) <i>Lower Egypt</i>		
<i>Province.</i>	<i>Chief Towns.</i>	<i>Markhaz or District.</i>
Beheira ..	Damanhur. Shubra Khit. Rosetta.	Abu Hummus. Damanhur. Dilingat. Ityai el Barud. Kafr el Dauwar. Kom Hamada. Rosetta. Shubra Khit.
Gharbiya ..	Tanta. Fuwa. Kafr el Sheikh. Mehalla el Kubra. Zifta.	Burullus. Disuq. Fua. Kafr el Sheikh. Kafr el Zaiyat. Santa. Shibin. Talkha. Tanta Town. Tanta District. Zifta.
Daqahliya ..	Mansura. Mit Ghamr. El Simbillawein.	Aga. Dikirnis. Fariskur. Mansura Town. Mansura District. Mit Ghamr. Simbillawein.
Sharqiya ..	Zagazig. Bilbeis.	Bilbeis. Faqus. Hihya. Kafr Saqr. Minyet el Qamh. Zagazig Town. Zagazig District.

<i>Province.</i>		<i>Chief Towns.</i>	<i>Markhaz or District.</i>
Minufiya	..	Shebin el Kom.	Ashmun. Minuf. Quweisna. Shibin el Kom. Tala.
Qalubiya	..	Benha.	Benha. Dawahi Masr. Shibin el Qanatir. Qalyub. Tukh.
(ii) <i>Upper Egypt</i>			
Giza	..	Giza.	Aiyat. Giza Town. Giza District. Saff. Imbaba. Helwan Town.
Faiyum	..	Medinet el Faiyum	Faiyum Town. Faiyum District. Itsa. Sinnuris.
Beni Suef	..	Beni Suef.	Biba. Beni Suef. Wasta.
Minya	..	Minya.	Abu Qurqas. Beni Mazar. Fashn. Maghagha. Minya Town. Minya District. Samalut.
Asyut	..	Asyut.	Abnub. Abu Tig. Asyut Town. Asyut District. Badari. Dairut. Mallawi. Manfalut.
Girga.	..	Sohag.	Akhmim. Balyana. Girga. Sohag. Tahta.

<i>Province.</i>	<i>Chief Towns.</i>	<i>Markhaz or District.</i>
Qena .. .. Qena.		Dishna. Isna. Luxor. Nag Hammadi. Qena. Qus.
Aswan .. .. Aswan.		Aswan. Idfu.

(c) **Frontier Provinces and Districts**

Western Desert Province (including oases of Siwa, Bahariya and Farafra).

Southern Desert Province (including Dakhla and Kharga oases).

Sinai Province (*see* Chapter VII).

Red Sea District.

### 3. Frontiers

The frontiers of Egypt are: on the north, the Mediterranean Sea; on the east, an approximate straight line from Rafa on the Mediterranean to Taba at the north-west extremity of the Gulf of Aqaba; on the south, the Sudan; on the west, an approximate straight line north and south from Salum on the Mediterranean coast through the waterless Libyan Desert to the massif of Oweinat, where it joins the northern boundary between Egypt and the Sudan.

On the western frontier a barbed wire fence has been erected by the Italian Government from the sea southwards for a distance of some 100 miles.

The situation of the frontier in the neighbourhood of Oweinat was, in 1934, a matter of dispute between the British and Italian Governments. By an agreement concluded in June, 1934, the Italian Government was confirmed in possession of the western portion of the Oweinat massif and the well of Ain Dua.

For details of these frontiers *see* Map No. 1.

Egypt thus possesses naturally strong land frontiers and there is little cause for anxiety as to her sea frontiers as long as British interest is maintained and British naval supremacy in Egyptian waters remains unchallenged.

#### 4. Maps and Mapping

From a military point of view, Egypt may be said to be satisfactorily mapped. There are two sources of supply of maps for military purposes :—

- (a) The Survey of Egypt.
- (b) The War Office.

Speaking generally, the maps produced by the Survey of Egypt are more up to date and therefore more in demand than the War Office publications.

##### (a) Survey of Egypt

(i) *Organization*.—The Survey of Egypt is a Department of the Ministry of Finance, under an Egyptian Director-General, with (1936) 13 Englishmen on the staff of the Department. It is divided into the following sub-Departments :—

Cadastral and Land Demarcation Office at Giza, Cairo, with District Survey Offices at Alexandria, Tanta, Shebin el Kom, Mansura, Zagazig, Cairo, Beni Suef, Faiyum, Minya, Asyut and Luxor.

Reproduction Office, Giza.

Computation Office, Giza.

Desert Surveys, Cairo.

Geological Survey, Cairo.

(ii) *Principal Series of Maps* (see Maps 2 and 2A).—The standard map scales adopted are :—

1/5,000 for Cadastral Surveys.

1/10,000 for Alexandria Town Plan.

1/25,000 series for the Delta and Nile Valley. The Faiyum, Kharga and Dakhla oases are also covered by this series. (*Note*.—There are a considerable number of sheets south of Cairo as yet unpublished.) These are mostly in Arabic only (1936), but a few sheets round Cairo and Alexandria, and also along the Suez Canal are in English.

1/25,000 Cairo Town Plan, with inset of Central Cairo at 12,000.

1/50,000 series. Egyptian Army Training Maps :—Suez Road and Ma'adi, Ribeiqi—Suez Road.

1/100,000 series. The whole of the cultivated areas, a good deal of the more important desert areas, the Red Sea coast and coast as far west of Alexandria as Sollum are on this scale.

1/300,000 series. Communication Map of Lower Egypt and the Faiyum.

1/500,000 series. A new series in course of production. So far the following sheets have been published :—  
Matruh, Cairo, North Sinai and Bahariya.

1/1,000,000 International series covering the whole of Egypt.

(Maps 2 and 2A are an Index to Maps published by the Survey of Egypt.)

With the exception of unimportant areas in the Western Desert and the central strip of the Eastern Desert between the Red Sea and the River Nile, the whole of Egypt has now been accurately mapped by this Department.

A list of "Maps and Publications for Sale at Giza" is circulated periodically, and maps of the desert areas can now be purchased from the Desert Survey Offices.

**(b) Maps Produced by the Geographical Section of the War Office**

\*The following are the principal maps or series of maps obtainable from the War Office :—

1/25,000 Training Area East of Cairo (G.S.G.S. 3944),  
Experimental Sheet, 1933.

1/25,000 Idku District, 1933 (G.S.G.S. 3948).

1/50,000 Cairo, 1928 (G.S.G.S. 3853).

1/50,000 Helwan, 1928 (G.S.G.S. 3853).

1/50,000 Abu Sir Pyramids, 1927 (G.S.G.S. 3853).

1/50,000 El Giza Pyramids, 1927 (G.S.G.S. 3853).

1/50,000 El Giza Manœuvre Sheet, 1933 (G.S.G.S. 3853).

1/50,000 El Saff, 1929 (G.S.G.S. 3853).

1/50,000 Shebin el Qanatir (G.S.G.S. 3853).

1/50,000 Tikh (G.S.G.S. 3853).

1/50,000 Ismailia (G.S.G.S. 3924) Eventually a six-

1/50,000 Fayid (G.S.G.S. 3924) sheet series of the

1/50,000 Geneifa (G.S.G.S. 3924) Suez Canal Area  
will be published.

1/250,000 (G.S.G.S. 3930). Sheet 1. Alexandria.

1/250,000 (G.S.G.S. 3930). Sheet 2. Port Said.

1/250,000 (G.S.G.S. 3930). Sheet 3. Cairo and Gebel  
en Naheid.

1/250,000 (G.S.G.S. 3930). Sheet 4. Cairo and Suez.

1/2,000,000 (G.S.G.S. 2871). Egypt sheet covers  
Palestine, Sinai and Egypt.

Map No. 3 is a key to G.S.G.S. maps of Egypt.

## 5. Principal Towns

*Explanatory Note.*—Notes on the principal towns in Egypt deal firstly with Cairo, then with the remainder in alphabetical order. The notes on Cairo, Alexandria, Port Said and Suez are supported by plans.

In compiling these notes, endeavour has been made to follow the sequence :—

- (a) General position of town ; importance.
- (b) Municipal System.
- (c) General type of houses and suitability for billeting.
- (d) Internal Communications—Tramways, 'Bus Routes, etc.
- (e) External Communications—Rail, Road, Air, Telegraphic, Telephonic, Wireless.
- (f) Population.
- (g) Labour.
- (h) Buildings, Hospitals, Factories, Workshops, etc.
- (i) Transport Vehicles.
- (j) Electric Power Supply.
- (k) Water Supply.
- (l) Health and Sanitation Organization.
- (m) Supplies.
- (n) Vulnerable Points, Bridges, etc.
- (o) Aerodromes or Sites available for Aerodromes.

In some cases it has not been possible to include all these headings as statistics are lacking. Whilst every endeavour has been made to ensure accuracy, great difficulties have been encountered in obtaining information for a variety of reasons, which will be briefly mentioned for the benefit of officers who may at any time find themselves engaged on similar work in Egypt.

Firstly, the peculiar position of the British Army in Egypt makes it extremely difficult to make direct approach to Egyptian Government Departments. In matters where the nature of the information required does render this method possible, the benefit of direct approach is often neutralised by the time taken to receive a reply and the inability of the Department concerned to grasp the significance of the question, probably due to language difficulties. Reliance has therefore been placed on the good-will of British persons occupying official and non-official positions

# GUIDE PLAN OF CAIRO AND DISTRICT

SCALE

Metres 1000 500 0 1 2 Kilometres

## INDEX TO PRINCIPAL BUILDINGS AND PLACES OF INTEREST.

*Column 1 below refers to the General Map, column 2 to inset of Central Cairo.*

[illegible]

in the country, personal reconnaissance and a study of official publications. It is to be noted that in the future the numbers of British officials will inevitably diminish as a result of the Treaty.

The utmost assistance has been rendered by members of the British Community, but in some cases the individuals concerned have been hampered by lack of technical knowledge. Personal reconnaissance has its limitations, as it does not overcome the difficulty of obtaining statistics of the many public utility concerns which are in the hands of European firms inimicable to British interests. Officially published statistics require scrutiny as regards accuracy and are seldom up to date. The most useful work of this nature is the Egyptian Government Annual Almanac.

Information on matters connected with labour is particularly hard to obtain, as labour in Egypt is not yet established on European lines. The Census of 1927 is of little assistance owing to the system adopted of defining occupations.

Finally, it may be added that Egypt is now at a stage of economic development, when new works projects are the order of the day, and therefore information, though accurate when received, soon becomes obsolete.

In the case of those towns of which plans are published in this Report, the spelling of place names is in accordance with the spelling on the plan.

## Cairo

(See Plan No. 1.)

Plan No. 1 is a Guide Plan of Cairo and District published by the Survey of Egypt. After each mention of a place name, reference is made to the map reference on the plan.

### (a) *General Position of Town, Importance*

Cairo, the capital of Egypt, situated on the right bank of the River Nile, about  $12\frac{1}{2}$  miles south of the Delta Barrage where the river bifurcates into the Rosetta and Damietta branches, consists of the city of Cairo proper and the outlying suburbs of—

- (i) Shubra to the north (G.4) (K.5 and L.5).
- (ii) Abbassia, Heliopolis (P.3 and Q.3), Zeitun, Helmieh and Matariya to the north-east.

(iii) Old Cairo (E. and F.12), Ma'adi and Helwan to the south and on the river bank.

(iv) Gezira (residential quarter) and Giza (D.12) to the west.

These areas amounting to 74 square miles, are included within the Governorate of Cairo and are considered under the heading of Cairo in this Report.

(b) *Municipal System*

Cairo has no Municipality, but is governed directly through the following departments :—

- (i) Tanzim, exercising most of the normal functions of a Municipality ;
- (ii) Cairo City Police ;
- (iii) Public Health ;
- (iv) Main Drainage ;

each functioning separately.

To co-ordinate their various activities, a Higher Tanzim Advisory Council to the Minister of Public Works and presided over by the Under-Secretary of State for Public Works, was instituted in 1929, its 18 members including the heads of all departments connected with Cairo, as well as four notables, two of whom are Europeans.

This Council advises on such matters as—

- (i) New technical laws and regulations concerning Tanzim matters, buildings, town planning, drainage, etc.
- (ii) Public utility concessions, including lighting, water supply, tramways, etc.
- (iii) New works programmes of Tanzim Departments.
- (iv) Yearly budgets of Tanzim Department.
- (v) Town planning schemes, street improvements, alignments, modifications, etc.
- (vi) Sites of Government buildings.
- (vii) Dangerous structures.
- (viii) Cairo City Police Traffic Regulations.

The *Tanzim Department* is responsible for executive action in connection with the majority of the above matters and in addition for the maintenance of the Nile banks within the Governorate. It controls the tramways, including the Heliopolis Oases Railway, the waterworks at Giza, Gezira and Helwan, and the Helwan electric supply.

*Cairo City Police.*—For police purposes, Cairo is divided into three divisions—

“A” Division, comprising roughly the north of Cairo from Opera Square (Midan Ibrahim Pasha e.4) to Heliopolis, has a population of 575,023 (1933) and a Police Force of 44 officers and 1,245 N.C.Os. and men and 235 ghaffirs (1935).

“B” Division, on the south-west of the town (including Helwan), has a population of 375,832 and a Police Force of 44 officers, 1,187 N.C.Os. and men and 217 ghaffirs (1935).

“C” Division, on the eastern boundary of Cairo, is the smallest but by far the poorest and most thickly populated. Its population of 377,287 is crowded into an area of 23 sq. km. The Police Force consists of 34 officers, 805 N.C.Os. and men and 70 ghaffirs.

The Mounted Troop of six officers and 230 N.C.Os. and men, the Guard Company of 19 officers, 1,064 N.C.Os. and men are additional to the above numbers. The above figures include 133 British officers and constables.

(c) *General type of houses and streets, and suitability for billeting*

The term “European Quarter” is commonly taken to include the following :—

- (i) Gezira Island (mainly residential).
- (ii) The district between (i) and El Giza (D.11 and 12) on the left bank of the Nile (residential).
- (iii) The shopping and business quarter in the triangle Cairo Main Station (G.6)—Midan Abdin (G.8)—Qasr el Nil (F.7)—Avenue de la Reine Nazli (F.7, G.6).
- (iv) Garden City (residential) (F.8, F.9).
- (v) The Ministerial Quarter immediately east of (iv) (F.8).

The majority of the houses in the above areas are well-built structures, of brick, stone and concrete, comparable to the European Quarters of Bombay, Calcutta, Shanghai and other cosmopolitan cities of the east. In the past few years, great progress has been made in the construction of blocks of flats, averaging five to seven storeys in height. Streets are broad, tarmaced and well kept. There are similar areas in Heliopolis, Abbassia, Ma'adi and Helwan.

In the native quarters, the majority of the houses are built of lathe and plaster. The more important streets are tarmaced and drained. The remainder are a mass of labyrinth-like lanes, little more than passages, twisting in and out between the houses.

The native quarter is quite unsuitable for billeting. In the European quarter adequate facilities exist, but in practice it would be better to accommodate troops under canvas within the boundaries of barracks and camps already occupied by troops, or in the grounds of Gezira Sporting Club.

(d) *Internal Communications*

(i) *Tramways* (routes marked red on Plan No. 1).—There are two systems, the Heliopolis Oases Railway and the Cairo Tramways. For source of power, *see* Serial 1 of Table referred to in sub-para. (j).

The Heliopolis Oases Railway runs a very fast system of electric trains between Fuad el Awal Avenue (G.7) (terminus in Sharia Emad el Din D.4) and Heliopolis, starting at 5.30 a.m. and ending at 1 a.m. Their trains only stop once an hour between Midan Bab el Hadid (G.6) and Heliopolis at Abbassia and Qubba.

Cairo Tramways have about 20 routes in and about the city and suburbs. One tram runs every 15 minutes to the pyramids at Giza. Rolling stock consists of 117 27-h.p. 40-seater carriages, 110 34-h.p. 40-seater carriages, 58 27-h.p. 32-seater carriages, 22 37-h.p. 24-seater carriages and 16 other carriages of varying h.p. with a total capacity of 530 seats. There are in addition 229 passenger carriages unfitted with engines.

(ii) *Bus Routes*.—Practically all parts of Cairo and suburbs are served by the Egyptian General Omnibus Company. The services throughout the day are at intervals of 5–10 minutes, starting at 5.30 a.m. and finishing at 2.00 a.m.

Statistics of buses will be found under sub-para. (i).

(e) *External Communications*

Cairo is the centre from which radiates the rail, road, air, telegraphic, telephone and wireless communications of the country. Details of the above will be found in Chapters XI–XV. The following are recorded for easy reference (*see* Index, Plan No. 1).

*Railway Stations.*

Main Station (G.6).

Pont Limoun (Matariya Line) (G.6).

Bab el Luq (G.8) (Cairo terminus of Helwan Line).

Helwan-les-Bains (Helwan terminus of Helwan Line).

*Telegraphs, Telephones and Wireless.*E.S.T. Telegraphs and  
Telephones.Head Office : Avenue de  
La Reine Nazli (G.6).Central Automatic Ex-  
change : Adjacent to  
Head Office (G.6).

Railway Traffic Offices :

Main Station (G.6) ;

Bulaq el Dakrur (B.8).

Government Wireless :

Transmission and re-  
ception from E.S.T.  
Building (G.6).Wireless, Marconi Co. } Joint Offices off Sharia  
Eastern Telegraph Co. } Kasr el Nil (D.5).Marconi Transmitting Station. Abu Zabal, 16 miles north  
of Cairo on east bank  
of Ismailia Canal.Marconi Receiving Station. Ma'adi, 7 miles south of  
Cairo, on edge of desert  
to east of the town.*(f) Population*The population in 1932 was 1,287,122, of which the  
principal foreign colonies were—

British .. 11,430 (excluding British troops).

French .. 9,732

Greek .. 20,356

Italians .. 18,808

Syrians and  
Palestinians 3,167

Turks .. 4,016

Others .. 9,967

showing an increase of over 222,000 since the 1927 Census,  
when the population was 1,064,567, including 851,700  
Moslems and 94,608 Copts.*(g) Labour (see also Chapter III, para. 7)*Unskilled labour is easily obtainable. The normal wage  
in Cairo, as elsewhere in Egypt, is four to five piastres  
per day. Labourers will work up to ten hours per day without

relaxing and, under supervision, can carry out any reasonable military task. The following occupational statistics are based on the 1927 Census. They merely suffice to show that persons of such trades do exist and that a proportion could be employed on military tasks if necessary. Nationality cannot be determined.

(i) *Engineering*

Agricultural engineers	..	..	124
Architectural engineers	..	..	463
Electrical engineers	..	..	135
Other engineers	..	..	1,188
Surveyors	..	..	27
Draughtsmen	..	..	321
Electricians	..	..	1,102
Smelters, casters, etc.	..	..	2,088
Turners	..	..	348
Drillers, riveters	..	..	892

(ii) *Motor Transport*

Drivers of all kinds	..	..	4,533
			(includes 704 bus drivers).
Motor car repairers	..	..	139
			Under another heading
			1,027 men are shown as
			engaged in "motor
			preparing."

(iii) *Transport Drivers and Carriers*

Coachmen	..	..	2,414
Carters	..	..	9,083
Camel men	..	..	445

(iv) *Docks and Shipping*

Boat and Shipbuilding	..	..	139
River and Canal Transport	..	..	2,668

(v) *Railways*

Egyptian State Railways service	10,771
	(including train drivers, 810).

(vi) *Telegraph, Telephone and Wireless Workers*

Telegraph services	..	..	956
Telephone services	..	..	1,324
Wireless services	..	..	13*

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\* In view of developments in wireless since 1927, this figure is an obvious understatement.

*(h) Buildings, Factories and Workshops**(i) Government, Municipal Buildings, Foreign Consulates, etc.*

The location of the Royal Palaces of Abdin and Qubba, Houses of Parliament, principal Government offices, the British Embassy (late Residency), principal Foreign Consulates, Military Barracks (both British and Egyptian), hotels, etc., are shown on the index to Plan No. 1.

*(ii) Barracks.—**British Army*

Qasr-el-Nil (F.7).

Citadel (H.9, J.9).

Abbassia (K.5 and L.4).

Helmieh (north-west of Helmieh).

Military Police Barracks (G.6).

Of the above, the Citadel, by virtue of its commanding position on the hill to the south-east edge of Cairo, is easy of defence against anything but modern artillery. On three sides it is hemmed in by slums. From its walls and towers, an excellent view of Cairo may be obtained and communication by visual telegraphy with Abbassia or Headquarters, British Troops in Egypt, is possible. The Citadel, in its turn, is commanded by the heights of the Gebel Moqattam.

*Egyptian Army and F.D.A.*

Abdin Palace, Cairo    Royal Bodyguard.  
(G.8).

Abbassia (K.5 and L.4)	Inf. Bde. H.Q.
	Two Battalions.
	Two Sqns. Cavalry.
	Engineering Company.
	Military Works Dept.
	Supplies Dept.
	Veterinary Dept.
	Cadet Training School.
	Signal School.
	Musketry School.
	P.T. School.
	Wokala Bulukat Omana School
	Music School
	Battalion School.
Pont de Qubba (M.3) (Abbassia).	Medical Corps H.Q. Hospitals.

*Egyptian Army and F.D.A.—contd.*

Heliopolis (N.3)	..	Arty. H.Q. Two Light Btys. One Coy. Garrison Arty.
Citadel (H.9 and J.9)		Ordnance Services.
Jebel Asfar (El Khanka)		Motor Machine Gun Bty.
(15 miles N.E. of Cairo).		Training School One Car Patrol One Camel Corps Section
Ma'adi .. .. .		Two Battalions.
Almaza Aerodrome		Air Force.
(north-east of Helio- polis).		

(iii) *Hospitals, and Buildings suitable for Hospitals, etc.*—  
In addition to the Citadel Military Hospital, there are a great number of hospitals and nursing homes, the chief being :—

Anglo-American Hospital, Gezira (E.7).  
Coptic Hospital (f.1).  
Dimerdashe Hospital (135 beds) (K.4).  
French Hospital (K.6).  
Greek Hospital (K.5).  
H.M. King Fuad Hospital (c.8).  
Italian Hospital (L.5).  
Jewish Hospital (J.5).  
Qasr el Aini Hospital (1,591 beds) and new building  
under construction almost complete (F.9).  
Victoria Hospital (late Deaconess) (c.4).

The majority of the buildings under para. (h) (i) would be suitable for conversion into hospitals and offices if necessary. In addition, there are numerous smaller hotels, modern blocks of flats, business premises, etc., in the European quarters of the town which could be readily adapted for this purpose.

(iv) *Factories and Works of Military Interest.*—*Government Workshops, Mechanical Department of Ministry of Public Works.*—Situated at Bulaq on the Nile bank, about 1½ miles north of Bulaq (Fouad I) Bridge (E.5).

The Government Workshops staff and maintain—

- (a) Government Steamer and Motor-boat Service.
- (b) Steam Rollers of the Tanzim Department.

In addition, they carry out repairs to all kinds of mechanical plants and machinery belonging to the Tanzim, Irrigation and other Government Departments, the installation of small pumping plants, electric and steam, for various Government services and the manufacture and repair of horse-drawn vehicles for the Tanzim Department, Municipalities and Local Commissions.

A foundry for cast and non-ferrous metals is available ; average weekly output, 25 tons.

A floating dock is available for docking Government steamers up to 600 tons deadweight.

Various up-to-date appliances are installed, including lathes, electric welding, oxy-acetylene welding and cutting, and electro-plating apparatus.

The workshops are served by a siding from the Egyptian State Railways ; a wharf crane is in a position to lift loads of 30 tons either from trucks on the railway or from barges on the River Nile.

An average of 1,800 persons are employed.

The Government Printing Press, just south of the Government workshops (E.6), comprises over 220 machines. Some 1,000 workmen are employed.

*Anglo-American Nile and Tourist Company's Workshops ; Thos. Cook & Son's Workshops.*—These firms maintain their own fleet of river steamers and have up-to-date workshops and foundries for general engineering work, including electric and oxy-acetylene welding. Messrs. Thos. Cook & Son's workshops are about 1 mile north of Bulaq (Fouad I) Bridge (E.6) (between Government Workshops and Government Printing Press). The Anglo-American Nile and Tourist Company's Workshops are at Shubra village (three-quarters of a mile north of G.1).

*E.S. Railway Workshops* (F.5).—The E.S. Railway Workshops are situated in Boulaq (*see* Chapter XIII—Railways, para. 11).

(v) *Motor Works and Large Garages.*—There are no motor or production works in Cairo. The following are details of the principal garages :—

Egyptian Omnibus Co's. Garage	Istablat-el-Turuq (off Sharia Maspero) (b.3). Facilities for repair and maintenance of Company's buses.
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Anglo-Egyptian Motors, Fords	Sharia Maarouf (c.4). Fully equipped for Ford repairs.
Moore Bros. . . . .	Sharia el Bustan (c.5). Equipped for Hillman and Humber, but not on any large scale.
Morris (Cairo Motor Company)	Avenue de la Reine Nazli (c.4). Equipped for Morris repairs.
Garage Rust . . . . .	Sharia Maarouf (c.4). General repairs. Also Wolseley agents.
Moring & Co. . . . .	Sharia Suliman Pasha (c.5). Lucas agents and general repairs to British cars.

(vi) *Banks*.—The following Banks have branches in Cairo :—

American Express Co., Inc.  
Athens.  
Barclays (D.C. & O.).  
Belge and Internationale en Egypte.  
Commercial Bank of Egypt.  
Commerciale Italiana per l'Egitto.  
Comptoir Nationale d'Escompte de Paris.  
Credit Foncier Egyptien.  
Credit Lyonnais.  
Dresdner.  
Italo Egiziano.  
Misr.  
National Bank of Egypt, Sharia Qasr-el-Nil.  
National Bank of Egypt, Sharia Borsa-el-Gedida.  
National Bank of Greece.  
Orient.  
Thos. Cook & Son (Bankers), Ltd.

(vii) *Post and Telegraph Offices*.—

General Post Office . . El Ataba el Khadra (e.4).  
Telegraph Office . . . (See sub-para. (e).)

(viii) *Bakeries*.—Numerous on European lines

(ix) *Abattoirs*.—Only one of military value is at Old Cairo. Like other Egyptian abattoirs, it is under Government control. Normal working hours would permit

of the abattoirs being placed at the disposal of the Military Authorities from 0930 to 1200 hours daily, when a maximum of 100 bullocks and 500 sheep could be dealt with. This was the procedure during the war, the supply of cattle and slaughtering being carried out by local contract.

Alternatively, one slaughter room, 19 by 28 metres, sufficient for dealing with 100 cattle a day could be put at the permanent disposal of the military.

(x) *Cold Storage*.—Eight hundred cubic metres available immediately and an additional 600 cubic metres in a month, if the Ghamra Ice Factory were authorized to build, without interfering with civil requirements, through the following firms :—

Compagnie Frigorifique (Offices : Sharia Zahr el Gammal (c.4).)

Wills & Co. (Offices : Bab el Luk Market (c.6).)

Nile Cold Storage. (Store : Sharia El Fahhama, Bulaq (F.6).)

Brasserie des Pyramides. (Factory : Village of Bulaq el Dacrur (B.8).)

Ghamra Ice Factory. (Ghamra (H.5).)

#### (i) *Transport Vehicles*

(i) *Mechanical Transport*.—In 1934 there were registered in Cairo, 438 buses and 1,559 lorries. It may be assumed that 50 per cent. of the buses and 15 per cent. of the lorries would be sufficiently reliable for military use on Egyptian roads. The vehicles so selected would be pneumatic tyred.

In 1936, H.Q., B.T.E., was in possession of statistics of 207 buses and 169 lorries of various types.

#### *Buses*

Egyptian General Omnibus Co.  
Offices and Depôt : Istablut-el-Turuq, off Sharia Maspero (b.3).

180 Single-deck  
Thornycroft.

#### *Detailed Composition.*

97 LC type, 27-seater.  
12 LC type, 29-seater.  
25 BC type, 27-seater.  
30 A.12 type, 20-seater.  
11 A.12 type, 14-seater.  
5 Touring Coaches BC  
type, 28-seater.

#### *Year of Construction.*

LC type .. 1930.  
A.12 type .. 1930.  
BC type .. 1929.

Six other small firms .. ..	27 of various types.
	<i>Detailed Composition.</i>
	10 GMC, 21-seater.
	1 GMC, 14-seater.
	6 Spa, 22-seater.
	3 Dodge, 21-seater.
	4 Latil, 21-seater.
	3 Studebaker, 16-seater.

*Lorries.*—The 169 lorries referred to above are in the possession of 20 different firms and include :—

Light lorries ..	100 Dodge, Jowett, Ford, Morris Commercial, Chevrolet.
Heavy lorries ..	69 Thornycroft, Leyland, Albion, Dodge, Renault, Ford, Chevrolet, White, GMC, Crossley, International Fiat.

Reliability is problematical (*see* Chapter XVI—Resources, para. 4). Twenty of the above are the property of the Shell Company of Egypt and eight of the N.A.A.F.I. (both under British control). The largest lorry-owning firm is the Matossian Cigarette Co., Giza (47 lorries).

*Touring Cars.*—There is no lack of touring cars in first-class running order on the streets of Cairo. The following are statistics of sources from which cars could be obtained quickly :—

Anglo-American Garage, Sharia Madbouli, working with the Egyptian Hotels, Ltd., and owned by M. Georgalas, a Greek, 20–30 large Buick or Studebaker. Very efficient service.

Keith & Co., Sharia Qubri	} 15–20 cars could be obtained from these sources.
Qasr-el-Nil.	
Anglo-Egyptian Motors, Sharia Maarouf.	
Morris, Avenue de la Reine Nazli	
Heliopolis Grand Garage, runs touring service to Suez.	

Apart from the above it would be easy to requisition or hire anything up to 100 cars at short notice from traded-in cars standing idle in dealers' premises.

(ii) *Draught Transport.*—Unlimited 2-wheeled and 4-wheeled carts are available for hire through the Traffic Department of the Cairo City Police. Normal rate of hire is Pt. 25 per day (6 a.m. to 6 p.m.). Normal load for 2-wheeled carts is 12 cwts., for 4-wheeled carts, 18 cwts.

(iii) *Pack Transport*.—Unlimited camels and donkeys are also available for hire through the Traffic Department of the Cairo City Police. Normal rates for hire is Pt. 12 per day per camel, and Pt. 15 per day per donkey, but contract rates can be obtained for large numbers for long periods. Normal loads: 4 cwts. per camel and  $1\frac{1}{2}$  cwts. per donkey.

*N.B.*—Both draught and pack transport will work outside the Cairo district. For further details see Chapter XVI—Resources, para. 4.

(j) *Electric Power Supply*

Particulars of the supply in various parts of the Cairo Governorate are given in the Table on page 90.

(k) *Water Supply*

(i) *Sources of Supply*.—Drinking water for Cairo and its suburbs is obtained from five different sources.

*Cairo Town, Abbassia, etc.*—Supplied by the Cairo Water Company from the main pumping and filtration plant at Rod el Farag (F.3), on the right-hand bank of the Nile, north of Cairo.

*Heliopolis, Helmieh, etc.*—Supplied by the Cairo Water Company from boreholes and pumps at Zeitun (1 mile north of Qubba Palace).

*Gezira*.—Supplied by the Tanzim Department from the pumping and filtration plant at Giza (D.9).

*N.B.*—Giza, Imbaba and other villages on the west bank of the Nile are also supplied from this source.

*Ma'adi*.—Supplied by the Delta Land and Investment Company from the Nile.

*Helwan*.—Supplied by the Tanzim Department from the Nile.

There is up-to-date filtration plant for all five districts and, if properly supervised, the water is of high quality. In all cases, balance reservoirs only are provided and are only sufficient for a few hours' normal demand.

(ii) *Details of Plant, etc.*—The *Rod el Farag* (F.3) plant has an output of 25 million gallons a day. The maximum demand in 1933 was slightly more than this; the balance was obtained from wells at Rod el Farag which can produce a further 10 million gallons a day.

### Cairo Electricity Supply

District.	Supply Company.	Power Station.			Generating and Transmitting Voltage.	Declared Pressure and particulars of Supply.	Method of Distribution.	Maximum Demand, 1933.
		Capacity.	Type of Plant.	Situation.				
(i) Heliopolis, Abbassia and Trams.	Heliopolis Oases Co.	New station, 20,000 kw.	Turbo-alternators ; coal or oil-fired boilers.	Shubra (North of Plan No. 1).	10,000 volts, 3-phase A.C., 50 cycle.	200/115 volts, 3-phase A.C., 4 wire.	Underground cable. Overhead line in Abbassia Barracks.	Lighting, 1,200 kw. Trams, 2,000 kw.
		Old station in reserve, 9,600 kw. Sub-station, 660 kw.		Do.				
(ii) Cairo, Giza, Gezira and Helieh.	Lebon et Cie	24,000 kw.	Turbo-alternators ; boilers coal-fired, but convertible to oil.	Sh. Saptieh Boulag, adjoining gasworks (F.5).	10,000 volts, 3-phase A.C., 40 cycle.	200 and 100 volts, single-phase. Large consumers supplied at 200 volts, 3-phase, 3 wire.	Underground cable.	11,200 kw.
		1,800 kw.	Oil engines		3,500 volts, 3-phase A.C., 40 cycle. Primary transmission, 10 kw., 3-phase. Secondary transmission, 3½ kw., 3-phase and 2 kV., single-phase.			

### Cairo Electricity Supply—*contd.*

District.	Supply Company.	Power Station.			Generating and Transmitting Voltage.	Declared Pressure and particulars of Supply.	Method of Distribution.	Maximum Demand, 1933.
		Capacity.	Type of Plant.	Situation.				
(iii) Centre of Cairo round Opera Square (Midan Ibrahim Pasha, e.4).	Cairo Electricity Co.	1,176 kw.	Oil engines	Rue des Bains, Cairo (behind Shepherd's Hotel).	110 volts D.C.	105 volts D.C.	Underground cable.	500 kw
(iv) Ma'adi    ..    ..    ..	Delta Land and Investment Company.	400 kw.	Oil engine	On Nile Bank at Ma'adi.	3,300 volts, 3-phase A.C., 50 cycle.	400/230 volts, 3-phase, 4 wire.	Overhead line H.V. cable. Transmission by cable.	200 kw., pumping day load. 120 kw. lighting.
(v) Helwan    ..    ..    ..	TanzimDept., Egyptian Government.	500 kw.	Oil engines	Near Helwan Railway Station.	250 volts D.C.	220volts D.C., 2 wire.	Overhead line.	180 kw. lighting.

The majority of the pumps are direct coupled to oil engines, the remainder being steam driven. The balancing reservoirs in the Red Hills and the Gebel Moqattam have a total capacity of 11 million gallons.

The Zeitun boreholes and pumps, owned by the same company, supply two distinct systems at different pressures—

(a) Heliopolis by a rising main to a small reservoir near Almaza. The pumping head is 262 feet.

(b) Helieh, Qubba and other suburbs at a head of 164 feet. This is the same as the Rod el Farag supply and districts are transferred at discretion from one supply to the other.

The balance tank for the system is at the N.E. corner of the Heliopolis race-course and will hold 700,000 gallons.

The Zeitun pumps are driven by oil engines and the system can supply at least  $5\frac{1}{4}$  million gallons a day. In 1935 the maximum demand was  $4\frac{3}{4}$  million gallons.

The *Giza Waterworks* are in Giza, near the Zoological Gardens, on the main roads to the Pyramids (D.9). Both slow and rapid sand filters are employed, the maximum output of the filters and pumps (which work against a head of 162 feet) being 40,000 gallons a day. As the maximum demand of the district in the summer of 1933 was about the same figure, additional plant is being installed in 1936 and a concrete balancing reservoir to hold 220,000 gallons is to be built at Imbaba. The possible daily output will then reach 660,000 gallons.

*Ma'adi Waterworks* are on the banks of the Nile and take power for the electrically-driven pumps from the power station described in Table referred to in para. (j). The plant is similar to that at Giza and Rod el Farag and has a maximum output of 7,900 gallons an hour. The present maximum demand of the town is 143,000 gallons a day.

At Helwan the Tanzim employs slow sand filtration, with subsequent sterilization by chlorine. The plant can deal with 55,000 gallons an hour, the summer maximum demand being 440,000 gallons a day.

A new pumping station is being added near Tura (Massara) to supply Tura, Massara and Helwan with water and electricity (for development over a period of five years).

*(l) Sanitation*

The drainage of the whole of the city proper is carried out by compressed air pumping, generated at the Marouf Air Compressing Station (C.4).

The city is divided into 65 areas, in each of which a Shone and Adult type of pneumatic ejector is installed for forcing the sewage through cast iron pipes to the main collector at Ghamra.

From Ghamra, all the sewage of Cairo and suburbs flows by gravitation to Kafr Farouk, where it is pumped to the purification works at Jebel Asfar Sewage Farm (El Khanka, 15 miles north-east of Cairo).

The total capacity of the works may be taken as representing 600,000 cubic metres per day with three pumping engines working and one in reserve.

The system broke down badly in September, 1934, when the Cairo sewers overflowed into the streets as a result of infiltration from the flooded Nile. Pumping engines broke down at Marouf Station and no spares were available.

*(m) Supplies*

There are no difficulties.

*(n) Bridges, Vulnerable Points, etc.*

The River Nile through Cairo is spanned by the following bridges :—

<i>Situation.</i>	<i>Type of Bridge.</i>	<i>Load Capacity.</i>
Imbaba (E.4) (See also Chapter XIII —Railways).	Railway and road	.. Maximum load on roadways 8 tons. Maxi- mum width of vehicles 8 ft. 5 in. Maximum height 11 ft. 8 in.
Bulaq (Fouad I) Bridge (E.6).	Road, with lift span. 900 ft. long. Roadway 40 ft., with wide pave- ments. Carries double tramway track.	All Military loads.

<i>Situation.</i>	<i>Type of Bridge.</i>	<i>Load Capacity.</i>
Zamalek Bridge (D.6).	Road with swing span. 410 ft. long. 40 ft. wide. Carries single tramway track and two-way traffic.	All Military loads.
Qasr el Nil Bridge (Khe-dive Ismail) (E.8).	Girder road bridge on stone buttresses, with swingspan. Total length 1,320 ft. Roadway 49 ft. wide with pavements 8 ft. wide on either side.	All Military loads.
English Bridge (E.8).	Iron road bridge on steel cylinders filled with concrete. Swing span. Total length 600 ft. Roadway 36 ft., with wide pavements.	All Military loads.
Mohammed Ali Bridge (F.9).	Girder road bridges over the narrow arm of the river between Old Cairo and Roda Island.	All Military loads.
El Malek el Saleh Bridge (E.11).	Length 272 and 220 ft. respectively, giving access to Roda Island.	
Abbas Hilmi Bridge (D.11 and E.11).	Road, with swing span on piers of steel cylinders, filled with concrete. Carries tramway track. Total length 1,755 ft. Roadway 49 ft. wide. Pathway on either side 8 ft. wide.	All Military loads.

*Other Vulnerable Points.*

Cairo Main Station (G.6).	
E.S.R. Wagon Park (B.9).	Bulaq el Dakrur.
E.S.R. Workshops (F.5)	Bulaq.
Electric Power and Gas-works (F.5).	Sabtiya, Bulaq.
Electric Power Station (North of Plan No. 1).	Shubra.
Transformer Sub-station (G.7)	Ezbekieh Gardens.
Transformer Sub-station (H.7)	Midan el Azhar.
Government Workshops (E.5)	Arsenal Yard, Bulaq.

Sewage Farm.	Khanka.
Waterworks (F.3).	Rod el Farag.
Pumping Stations.	Marouf.
	Zeitun.
Balance Tank.	N.E. corner of Heliopolis Race-course.
Waterworks.	Ma'adi.
Asiatic Petroleum Co's. Dépôt (J.4 and J.5).	Mahmasha.
Marconi House (d.5)	Off Sharia Qasr el Nil.
Automatic Telephone Office.	} Avenua de la Reine Nazli.
Telephone and Telegraph Office (G.6).	
W/T Station.	Abu Zabal.

(o) *Aerodromes*

There are Royal Air Force aerodromes at Heliopolis and Helwan.

The Egyptian Government Airport is at Almaza, near Heliopolis, and this is used by all civilian aircraft except the Imperial Airways. Imperial Airways will operate from Almaza as soon as accommodation is available.

Flying boats can, if necessary, land on the Nile. For further details see Chapter XV—Communications by Air ; and Chapter XVIII—Egyptian Army Air Force.

## Alexandria

See *Plan No. II.*—(Figures in brackets in text refer to the figures in circles on the Plan. Other figures refer to the Quay Numbers in Chapter X—Ports.)

(a) *General Position, Importance.*—Alexandria, once one of the busiest cities of the world, is still Egypt's principal port and second largest city. Situated on the Mediterranean coast, on a long strip of land not more than 2 miles in depth between Lake Maryut and the sea, it is still rapidly extending along the coast to the east and west.

(b) *Municipal System.*—Local authority is vested in the Governor, who is assisted by a sub-governor, to deal with Native Administration, Waqfs, etc.

An international Town Council, of which the Governor of the City is ex-officio President, deals with all matters of local taxes, roads, bridges, town planning, etc.

The strength of the Alexandria City Police in December, 1936, was as follows :—

European Officers ..	15	Commandant, 12 British and 2 Italians.
Native Officers ..	93	
European Constables	75	
Other Ranks, Police	3,342	
Mounted Troop ..	120	
Guard Company ..	530	
Fire Brigade ..	269	
Ghaffirs .. ..	242	
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Total ..	4,686	

Four fire stations are shown on the plan of Alexandria. Fire fighting appliances maintained, exclusive of those in charge of the Ports and Lights Administration, include :—

- 1 Fire float. Capacity 2,000 gallons per minute.
- 10 Motor pumps of various capacities.
- 2 Motor fire escapes.
- 48 Fire extinguishers of various types.
- 32,400 ft. of  $2\frac{3}{4}$  in. canvas hose.
- 11,500 ft. of  $3\frac{1}{2}$  in. canvas hose.
- Hose tenders, ladders, hand fire escapes, etc.

(c) *General Type of House and suitability for Billeting.*—In Alexandria there is no fixed line of demarcation between the Native and the European quarters though Karmuz is completely native and Ras el Tin practically so. Other predominantly native districts are Gabbari, Gumruk, Amfushi, Minet el Bassal and Fleming.

The remainder of the town is largely of European appearance, especially near the sea. Buildings are chiefly brick and freestone, with stucco or cement.

Troops could be billeted without any difficulty all along the front and in Ramleh, though in actual practice it would be better to accommodate them under canvas. There are suitable camp sites at Sidi Bishr, the Alexandria Sporting Club, the new Race-course, the Stadium, and adjacent to Mustapha Pasha barracks.

(d) *Internal Communications.*—In the older portions of the town streets are narrow, but all the new roads, the road along the sea front and the principal approaches to the town are broad and tarmaced.

(e) *External Communications.*—(i) *Rail.*—Alexandria is linked with Cairo by a double-track railway, express trains covering the distance in three hours. There is a terminus in the city and a loop line skirting the city to the harbour. In addition a single-track line runs eastwards to Rosetta, and another westwards along the coast to Mersa Matruh.

(ii) *Roads.*—There are only three main roads of approach, viz., from Cairo through the delta, by the new desert road from Cairo, and from Rosetta. The narrow bottle-neck through which both road and rail communications pass, owing to the influence of Lake Maryut, is worthy of notice.

(iii) *Canals.*—The Mahmudiya Canal connects Alexandria with Cairo, joining the Rosetta branch of the Nile at El Mahmudiya, whence shallow draft cargo vessels can enter the network of canals in the delta.

(iv) *Telegraphic, Telephonic and Wireless Communications.*—Are satisfactory. Cables leave Alexandria for Malta, Crete, Cyprus and Port Said. The E.T.C. land-line joins Alexandria and Cairo, and the E.S.T. system of telegraph and telephone with the principal towns of Egypt. A Government Wireless Station works to ships and aircraft. (See Map No. 9 and Chapter XIV for full details.) The following are given for easy reference. :—

E. S. T. Telephones (1)

Administration.

Marconi Co. and (2) Rue du Telegraph Anglais.

E.T.C. Offices.

Government Wireless (3) Ras el Tin by remote control.  
Transmission.

Receiving Office .. (4) At new Railway Station.

Cable House .. (5) Silsila Fort.

(v) *Air.*—Misr Airwork run a daily air service from Cairo to Dikheila Aerodrome (6 miles west of Alexandria) and Imperial Airways flying boats link Alexandria with Europe via Athens.

(f) *Population.*—The population in 1933 was 610,000, of whom 500,000 were Egyptian subjects. The principal foreign colonies were—

British .. ..	15,000 (includes 11,000 Maltese).
Greeks .. ..	60,000
Italians .. ..	35,000
French .. ..	12,000

Whilst the foreign element remains fairly constant, the native population is increasing rapidly.

Alexandria has always been famous for its unruly mob, and trouble breaking out there is likely to be more serious than in other towns in Egypt. The unruly quarters are Gabbari, Minet el Bassal, Gumruk, Anfushi, Manshiya, Karmuz and Fleming.

Many of the most important business concerns are owned by Europeans, especially Italians, unfriendly to British interests.

(g) *Labour*.—Figures are difficult to determine as labour is not organized as in Europe. The following estimate is partially but not entirely based on the 1927 Census. No guidance can be obtained as to nationality but the skilled trades include a proportion of Italians and Greeks.

(i) Engineering.

Electrical engineers	..	70
Electricians	.. ..	800
Mechanical engineers	..	300

(ii) Motor transport.

Drivers	.. ..	2,000	including 200 bus drivers.
Mechanics	.. ..	500	

(iii) Transport drivers and carriers—2,250

Carters	.. ..	4,250
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(iv) Docks and shipping.

Porters, good sorts and supercargo	.. ..	11,300
Sailors	.. ..	3,250

(v) Railway workers.

General	.. ..	5,000	including 450 drivers and firemen.
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(vi) Telegraph, telephones and wireless workers.

Telegraphists	.. ..	600
Telephone	.. ..	600
Wireless	.. ..	40

Wage rates for skilled labour vary. Normal wages for unskilled labour Pt. 4 to 5 per day. Labourers will work up to ten hours a day and under supervision can carry out any reasonable military task.

(h) *Buildings, Factories and Workshops*.—(i) *Government, Municipal Buildings, Consulates, etc.*—In addition to the Royal Palace of Ras el Tin there is another palace at Muntaza, a few miles east of the city.

(ii) *Barracks.*—

British	.. Mustapha Pasha Barracks	.. (21)
	Kom el Dikka fort	.. (22)
	R.A.F. Depôt, Abukir (12 miles east).	
Egyptian Army	Mex, Two Battalions	.. (24)
	Ras el Tin, Royal bodyguard when H.M. is in Summer Residence	(25)

(iii) *Hospitals.*—

Nationality	Name.	No. of Beds.	No. on Map.
British (mil.)	Ras el Tin	85	(10)
British	Anglo-Swiss	200	(11)
Egyptian	Chatby Hospital	60	(12)
Egyptian	Government Hospital	1,300	(13)
French	European Hospital	180	(14)
Greek	Greek Hospital	171	(15)
Italian	Italian Hospital	180	(16)
Jewish	Jewish Hospital	70	(17)

There are also the Egyptian Hospital, Al Moassat (20), 450 beds, under construction, and the Greek Hospital (new) under construction, number of beds still undetermined.

*Special.*

Egyptian	Gabbary Hospital	135	(18)
	Quarantine.		
Egyptian	Infectious diseases	100	(19)

In addition there are a number of private clinics.

(iv) *Buildings suitable for Hospitals, Offices, etc.*—There are a very large number of well-constructed European type buildings suitable for conversion. Particularly suitable are Ras el Tin Palace (25), the San Stephano Casino (23), and the new Italian School (85).

(v) *Factories and Works, large M.T. Stations, Garages etc.*—The following are of military interest:—

Ports and Lights	Equipped to carry out repairs
Administration	to motor cars belonging to
Workshops, Ras el Tin (62).	The Frontiers Administration, Post Office and Alexandria Governorate.

Ford Motor Co. (66) Equipped for semi-assembly and all Ford repairs. £8,000 stock of spares maintained.

Fiat (67)	.. ..	Similarly equipped for Fiat cars.
General Motors, Minet el Bassel (68).		Similarly equipped for Chevrolet cars. British owned.
Recta Garage near Ramleh Station (69).		General repairs and agents. British owned.
Société des Autobus D'Alexandrie Depot adjacent to Sidi Gaber Station (72).		Equipped for repairs to its own fleet of buses.
Ramleh Electric Railways, adjacent to Mustapha Pasha Station (63).		Equipped for repairs to its own Mustapha fleet of vehicles.
Khedivial Mail Workshops (64).	}	General engineering, welding, etc. (for full details see Chapter X—Ports, Alexandria).
Alexandria Engineering Co. (65).		
E. & C. Zachari Bros. (70).		

There are so many garages equipped with up-to-date workshops, that the question of adapting factories for the repair of motor vehicles does not arise.

(vi) *Banks.*—

Athens .. ..	(26)
Barclays (D.C. and O.) .. ..	(27)
Belge and International en Egypt ..	(26)
Commerciale Italiana per L'Egitto ..	(1)
National Bank of Greece .. ..	(30)
Credit Lyonnais .. ..	(26)
Dresdener Bank .. ..	(28)
Italo Egiziano .. ..	(30)
Ionian .. ..	(28)
Land Bank of Egypt .. ..	(30)
Lloyds .. ..	(29)
Misr .. ..	(30)
National Bank of Egypt .. ..	(30)
Ottoman .. ..	(31)
Thos. Cook and Sons .. ..	(32)

(vii) *Abattoirs*, near quarantine quay, El Waroyan (39).—Four slaughtering halls about 400 metres square and a fifth hall 200 metres square. Approximately 700 head of

cattle are slaughtered per diem, and numbers could be doubled to meet military requirements without interfering with civil requirements. Cattle from abroad are submitted to a 24-hour quarantine.

(viii) *Cold Storage*.—Amalgamated Ice Factories and Cold Stores S.A.E. (Office at Nuzha Rue Albert 1<sup>er</sup>) have two factories, one at 37, Rue Moufatish, Hadra (86) and a large modern ice factory near Nuzha Bridge (81). 4,500 cubic metres storage space can be made available without interfering with civil needs. 1,500 cubic metres could be added on two months' notice.

(i) *Transport Vehicles*.—(i) *Mechanical Transport*.—In July, 1935, 705 lorries and 181 buses were registered in Alexandria. It is estimated that 15 per cent. of the lorries and 60 per cent. of the buses can be regarded as reliable for L. of C. work on Egyptian roads. The percentage considered reliable would consist entirely of pneumatic-tyred vehicles. There is no lack of up-to-date touring cars in private possession. The principal firms from which lorries, buses, and touring cars can be obtained are as follows :—

*Lorries*.—Particulars are available of 12 lorry-owning firms possessing 118 lorries between them, the principal of which are :—

Firm.	Ref. No.	Address.	Approx. No. of Cars.
Motor Car and Engineering Co.	(76)	7b Rue Saleh El Dine	10
Antoine Zahra ..	(75)	41 Bab el Karasta ..	10
Delta Motor Transport Co.	(75)	Rue Dar-es-Salaam ..	10
Messrs. Cauro and Spiteiri.	(75)	12 Rue Dar-es-Salaam	10
La Fluviale Van der Zee & Co.	(74)	Head Office : 10 Sh Cherif-Pasha. Transport Depôt : Rue Dar-es-Salaam.	10
Ford Motor Co. ..	(66)	Rue Soter Mazarita ..	40*

\* Stock for sale.

*Buses.*—Statistics are available at H.Q., B.T.E., of all buses based on Alexandria, and as a point of interest it is to be noticed that they amount to 227 as against 181 registered. The principal bus owning firms with statistics are as follows :—

*Société des Autobus d'Alexandrie* (S.A.E.) (72).—Offices and Garage : 2 Rue Cimarose (adjacent to Sidi Gaber Railway Station). 50 buses, types G.M.C., International, Federal, Studebaker, constructed in 1931 and 1932, all 28-seaters, but some carry eight standing passengers in addition. 60 per cent. reliable.

*Ramleh Electric Railways.*—Offices : Place Ismail I, near Ramleh Station. Garage and Dépôt (63), near the Central Tram Dépôt, Mustapha Pasha Station. 28 buses, principal types G.M.C., Leyland and Thornycroft, constructed in 1934 and 1935. Average seating capacity 26-30, with standing room for 8-13. Reliability 90 per cent.

*Société des Autobus Express.*—Offices : Rue Trieste Garage (71). In Ragheb Pasha, near the Mahmudiya Canal. 49 buses, mainly Fords, constructed from 1925 to 1931. 18-24 seaters. Reliability 60 per cent.

*Société des Autobus "Sicilia"* (73). (R. Recupero and G. Romeo, Italian firm).—Offices and Garage : No. 4 Rue Tito Bey Chini (off Boulevard Said I<sup>er</sup>), 20 Ford buses, constructed 1931, 18-24 seaters. Reliability 60 per cent.

*Société des Autobus de Damanhour.*—Office : 5 Rue Salah el Din. (71). Garage : Rue Canal Mahmudiya, Karmuz. 18 buses : Ford, Federal and Chevrolet, 1931-33. 18-24 seaters. Reliability 80 per cent.

*Touring Cars.*—Ford Motor Co., Mazarita (66). Generally 5-10 touring cars in stock.

Fiat, Mahurram Bey (67).—Generally 10-12 open cars cars of light variety in stock.

General Motors, Minet-el-Bassal (68).—Generally 10-20 Chevrolets in stock.

(ii) *Horse Transport.*—No difficulty in hiring vehicles. Apply to the Alexandria City Police in the first instance.

(j) *Electric Power Supply.*—(i) *Electric Light Company.*—The principle supply of electricity is in the hands of a French Company, Messrs. Lebon, who have a monopoly of the lighting and also supply most of the other power requirements of the town.

The majority of the streets are lit with gas supplied by the same company. The power station and gas-works (33), are situated on the Mahmudiya Canal in the Karmuz quarter. 3-phase, 50-cycle current is generated at 10,000 volts by seven steam turbo alternators with a total rating of 30,000 kW. The boilers can be fired with either pulverised coal or oil. 3-phase cables go to three sub-stations: (a) in the middle of the town, (b) at Ibrahimiya and (c) in Bulkeley (40). At these the current is transformed down to 2,000 volts single-phase in the case of the town supply and 3,000 volts single-phase at Ibrahimiya and Bulkeley.

Two core cables from these stations supply single-phase transformers, many of them pole-mounted. Final distribution is 220 volts three-wire.

A separate 2,000-volt cable from the power station is taken to sub-stations in the warehouse and factory area in Minet-el-Bassal, for power purposes.

(ii) *Railways*.—The Egyptian State Railways and the Alexandria and Ramleh Railway (really a tramway) Company also have power stations. The E.S.R. Power station and workshops (34) is at Gabbari in the Karmuz quarter. It contains 5,000 kW. of steam turbine plant, generating at 6,000 volts three-phase, 50-period, and supplies power and light to the railways' workshops, goods yard, coal transporting plant in the harbour, etc.

It also partially supplies the Alexandria and Ramleh Tramways Company, which has two power stations of its own. The smaller, at Chatby (35), generates 550 volts D.C. with 5 Diesel engines of 400–500 kW. each. The larger, at Karmuz (36), has 8,000 kW. of steam and oil engine plant and, in addition to the tramway, supplies about 1,700 kW. to 70 factories for power purposes. The boilers can be fired with either oil or coal.

(k) *Water Supply*.—The entire water supply of Alexandria from Dikheila on the west to Montaza on the east is derived from the El Mahmudiya Canal, through a private English Company, The Alexandria Water Company.

This Company operates two waterworks (38) (42) to the same system of pipes, the first of which at Siyuf (38), near the junction of the Cairo–Ramleh and Cairo–Alexandria roads, was opened as recently as June, 1935, and is designed to produce  $4\frac{1}{2}$  million gallons a day; present capacity is 1 million gallons a day.

The old pumping station at El Farkha (37), which will continue to operate, pumps drinking water which runs under gravity in a canal to the main pumping and filtering station at Round Point (42).

There is a balance reservoir near Kom el Dikka (43), but it holds only some two hours supply for the whole town.

The pumping plant is partly steam and partly oil engine driven, but the oil engines are adequate by themselves for all normal requirements. The normal head in the mains is 100 ft.

The capacity of the filters is 2,420,000 gallons a day, while the demand rises in summer to 2,000,000 gallons a day.

(l) *Sanitation*.—The water system of sanitation is gradually replacing the cesspit system throughout the town.

(m) *Supplies—where drawn*.—Staple articles of diet come into the town from the Delta, through Damanhur, but the luxury trade enters the port from sources in the Eastern Mediterranean.

(n) *Vulnerable Points—Bridges, etc.*—(i) Attention has been drawn to the vulnerability of the Mahmudiya Canal as the sole source of the town water supply.

(ii) *Bridges considered vulnerable in order of importance*.—

Gabbari Bridge (78)	Steel road bridge over railway, and sole means of access to Mex District. Carries double tramway track and all military loads. Stone approaches give access to steel bridge 100 yards long, 80 ft. wide, including pavements, supported by three rows of seven steel pillars each, over 12 lines of railway.
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Main line railway bridge over Mahmudiya Canal (79).	Steel railway bridge carrying double track railway from Cairo to Alexandria town over canal and road, 62 yards long by 27 ft. wide, including swing 30 yards long. Remaining portion supported by three rows of three steel pillars.
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Road bridge over Mahmudiya Canal giving access to Gabbari Bridge (80).	Masonry with steel swing carrying double tramway track, and all military loads. 100 yards long in all, 51 ft. wide including narrow pavements. Steel swing 42 yards long. Brick portion consists of 5 arches. Alternatives available in event of destruction.
Nuzha Railway bridge (81).	Steel railway bridge carrying single track loop line from town line to direct Docks line. 42 yards long in all including 30 yards swing.

*N.B.*—There are other road bridges over the Canal as shown in Plan No. II, capable of carrying military loads, but of no vital importance.

(iii) *Vulnerable Points.*—

New Water-works	.. ..	Siyuf (38).
Telephone Exchange	.. ..	Bacos (8).
Power Station	.. ..	Bulkeley (40).
The Residency	.. ..	Mustafa Pasha (45).
Ramleh Electric Railway Bus Depôt.		Near Mustafa Pasha Station (63).
Societe des Autobus d'Alexandria Depôt and Garage.		Near Sidi Gaber Station (72).
Government Garages	.. ..	El Hadra (49).
Power Station (Ramleh Electric Railways).		Chatby (35).
Water-works	.. ..	Round Point (42).
Pumping Station	.. ..	El Farkha (37).
Reservoir	.. ..	Kom el Dikka (43).
E.T.C. Cable Hut	.. ..	Silsila Fort (5).
Marconi and E.T.C. Building	.. ..	El Manshiya (2).
Telephone Exchange	.. ..	El Attarin (1).
Gas and Electricity Works	.. ..	Karmuz (33).
Tramway Depôt	.. ..	Karmuz (36).
High Pressure Fire Service	.. ..	
Pumping Station	.. ..	Minet-el-Bassal (41).
Petroleum Tanks	.. ..	El Gabbari, Dock area.

(o) *Aerodromes.*—In addition to the R.A.F. aerodrome at Aboukir, there are four moorings in Aboukir Bay suitable for seaplanes and flying-boats. Alexandria Harbour seaplane base is used regularly by the flying-boats of

Imperial Airways on the Brindisi-Egypt sector of their service. There is a slipway and mooring buoys and a staff of approximately 25 British and 25 local employees.

The Civil Airport of El Dikheila, about 6 miles south-east of Alexandria is used by Imperial Airways, K.L.M. (Royal Dutch Air Lines) and Misr Airwork. This would become the Egyptian Army Aerodrome in the event of future expansion.

### Aswan

(a) *General Position, importance.*—East bank of the Nile, 583 miles from Cairo, at the beginning of the first Cataract. Station of one Battalion of the Egyptian Army, in barracks at north end of town. Important tourist centre during winter months, and site of Nile barrage (for details see Chapter V, para. 3—The Nile).

(b) *Municipal System.*—Mudir presiding over Municipal Commission. 110 Police. One fire engine.

(c) *Houses and Streets, and suitability for Billeting.*—Only principal hotels and stone houses on river bank are suitable for billeting.

(d) *Internal Communications.*—One reliable hotel bus; several native passenger buses unreliable. Many taxis.

(e) *External Communications.*—Railway to Cairo. River to Wadi Halfa for the Sudan. There is also a bi-weekly Air Service to Cairo during the winter months. Aswan can be approached by Military Transport by desert track from Idfu, and also by a track on the east bank of the Nile, but for normal purposes it may be said that there are no road communications. State Telegraph office.

(f) *Population.*—13,500 Moslems—mainly Nubians—1,200 Copts, 124 British, 280 other foreigners.

(g) *Principal Buildings.*—Mudiriya, Markaz, Consular Agency, Trades School, Cataract and Grand Hotels (hold 300 each), St. James Hotel. Several well-built private houses.

#### *Hospitals.*—

Government Hospital	60 beds	} Could be made suitable for Europeans.
Eye Hospital .. ..	25 beds	

*Banks.*—National. Cook's during tourist season.

*Factories and Workshops suitable for Repair of M.T.*—Nil.

(h) *Electric Power Supply*.—Power station 250 yards south of railway station. Prime movers, 2 Krupps Diesel 150-h.p. each. It is proposed to install another 450-h.p. Diesel engine. Alternating current, 3 phase, frequency 50. Main feeder, cable to transformer. Overhead distribution. Maximum demand on system 102 kW. Maximum capacity 208 kW. Chiefly used for town lighting.

(i) *Water Supply*.—Water-works 200 yards S.E. of the Cataract Hotel. Water is drawn from the Nile. There are two centrifugal pumps, driven by two Diesel engines each of 49 h.p. Sand bed filtration. Coagulant, sulphate of alumin. Output of filters, 120 cubic metres per hour. Two storage tanks, one of filtered and the other of unfiltered water, each holding 250 cubic metres. Maximum demand, 2,500 cubic metres per day in summer and half that amount in winter.

(j) *Sanitation*.—No drainage system. Hotels and main buildings have water-closets and cesspits.

(k) *Supplies, where drawn*.—Meat and cereals mainly from the Sudan, though a limited supply of meat comes from Asyut, but hotels import from Cairo and Europe.

(l) *Bridges, vulnerable points*.—A roadway, 26 ft. wide, suitable for all military traffic, crosses the River Nile on the Barrage. It is not considered vulnerable. The power station and water-works are vulnerable points.

(m) *Aerodromes*.—Royal Air Force landing ground used (see Appendix 5) by winter bi-weekly Air Service.

### Asyut

(a) *General Position, importance*.—West bank of Nile, 249 miles south of Cairo. Capital of Upper Egypt. Manqabad, station of two battalions of the Egyptian Army, 4 miles north of town. Site of Nile Barrage (for details, see Chapter V, para. 3—The Nile).

(b) *Municipal System*.—Mudir presiding over Municipal Council, which includes a foreign representative.

366 Police and 166 Ghaffirs.

48 warders in Asyut Prison.

Fire Brigade has one engine and one fire-escape.

(c) *Houses and Streets, and Suitability for Billeting*.—Old native town unsuitable. New town between it and the Nile Barrage has well-laid out metalled streets of modern appearance. Many buildings suitable for billeting.

(d) *Internal Communications*.—Six buses on local service.

(e) *External Communications*.—Railway to Cairo and southwards to Shellal. Road communication northwards satisfactory; southwards the road deteriorates, but continues to Idfu. State telegraph office.

(f) *Population*.—55,000 Moslems, 20,000 Copts, 150 British, 32 Americans, 25 other Europeans.

(g) *Principal Buildings*.—Native Courts, Government Secondary School, Administrative Offices, American Mission College, Preparatory School, Pressley Memorial Institute.

*Hospitals*.—

Government Hospital	190 beds	} Both suitable for Europeans.
American Mission Hospital .. ..	130 beds	

*Banks*.—Barclays, National, Bank Misr.

*Factories and Engineering Works suitable for Repair of M.T.*—Nil.

(h) *Electric Power Supply*.—Power station east of railway at Station. Prime movers, Diesel engines run on mazout. Maximum capacity, 750 kW. Plant generates alternating current, single phase, 3,000 volts, 50 cycles. Main feeders to transformers in town are underground, 3,000 volts, single phase. Distribution by overhead lines, single phase, three wire at 220 volts. Maximum demand is about 380 kW. mainly for lighting.

(i) *Water Supply*.—Artesian wells at depth of 220 ft. No filtration or chemical treatment, but supply exceptionally pure. Storage tank on hill west of town. Water-works on Nile bank, half mile east of railway station.

(j) *Sanitation*.—No town sanitation. Cesspits in new town.

(k) *Supplies, where drawn*.—Considerable local resources.

(l) *Vulnerable Points, Bridges, etc.*—The River Nile Barrage provides a crossing for all military loads. Power station and water-works are vulnerable points.

(m) *Aerodromes*.—Royal Air Force Landing Ground three miles W.S.W. of Manqabad (*see* Appendix 5) is used by Imperial Airways.

### Benha

(a) *General Position, Importance*.—35 miles north of Cairo. Main junction between Cairo, Alexandria and Port Said. Rail communications cross the Nile by important bridge there.

(b) *Municipal System*.—Mudir presiding over Municipal Commission.—

104 Police.

20 Firemen, one motor and one horse fire-engine.

(c) *Houses and Streets, and Suitability for Billeting*.—Most houses native, mud, brick or plaster. Only principal buildings suitable for billeting. Most streets narrow, 4 to 6 yards wide, but new streets 6 to 20 yards wide. Surface good.

(d) *Internal Communications*.—No internal bus service.

(e) *External Communications*.—Good railway service to Delta towns, being main junction between Cairo, Alexandria and Port Said. Good mud roads radiate in all directions. Native buses in very bad repair run to Cairo and neighbouring towns. Canal junction. State telegraph office.

(f) *Population*.—35,000 Moslems, 800 Copts, 200 Greeks, 100 other foreigners. No permanent British inhabitants. Possible centre of internal disorder.

(g) *Principal Buildings*.—Governorate, Government School, Orphanage, Post Office.

*Hospitals*.—

Government Hospital	75 beds	{ Could be made suitable for Europeans.
Ophthalmic Hospital	10 beds	

*Banks*.—National, Greek, Ionian, Bank Misr.

*Factories and Works suitable for Repair of M.T.*—Nil.

(h) *Electric Power Supply*.—Power station on west bank of Taufiqi Canal about 1 mile south of railway station. Prime movers Diesel engines. Overhead distribution.

(i) *Water Supply*.—Source, Taufiqi Canal. Pumped by two Worthington pumps, chlorinated and filtered, and laid on to newer houses. Older houses have outside taps.

(j) *Sanitation*.—Primitive, except to newer houses, where water is laid on.

(k) *Supplies, where Drawn*.—Considerable local resources.

(l) *Vulnerable Points, Bridges, etc.*—Road and railway bridge over Damietta branch of River Nile suitable for all military loads and vulnerable (see also Chapter XIII—Railways, para. 9). Railway station, power station and water-works are vulnerable points.

(m) *Landing Grounds*.—Nil.

### Beni Suef

(a) *General Position, importance.*—West bank of Nile, 73 miles south of Cairo. Cotton ginning centre.

(b) *Municipal System.*—Mudir presiding over International Municipal Commission.

300 Police and Ghaffirs.

Fire-brigade with one steam and one motor fire-engine.

(c) *Houses and Streets, and suitability for Billeting.*—Many substantial buildings that could be used for billeting. Principal streets tarmaced.

(d) *Internal Communications.*—Principal streets are good. No internal services.

(e) *External Communications.*—On main railway line from Cairo to Shellal. Good mud roads running north and south and to the Faiyum. Some reliable buses run to Cairo and other provincial towns.

(f) *Population.*—35,500 Moslems, 4,000 Copts, 30 British, 400 Greeks, 70 other Europeans.

(g) *Principal Buildings.*—Mudiriya, Law Courts, Government Primary School, Government Secondary School, American Mission (outside town), two cotton ginning factories.

#### *Hospitals.*—

Government Hospital, 50 beds, suitable for Europeans.

Ophthalmic Hospital.

Infectious Disease Hospital.

*Banks.*—National, Barclays, Misr, Agricole, Ionian, Banca Commerciale.

(h) *Electric Power Supply.*—Power station outside town on road to River Nile. Prime movers, Diesel engines with overhead lines.

(i) *Water Supply.*—Source, River Nile. Settling tanks and Jewel filters. Power station pumps water to distributing tank in main square.

(j) *Sanitation.*—Cesspit.

(k) *Supplies, where drawn.*—Europeans receive supplies from Cairo. Bread, meat, poultry and vegetables can be obtained locally.

(l) *Vulnerable Points.*—Power station.

(m) *Landing Grounds.*—A sandy peninsula on the Nile. Can be used during low water.

### Bilbeis

(a) *General Position, importance.*—On the Ismailia Sweet Water Canal, 14 miles S.S.E. of Zagazig, and on the main road from Cairo to Ismailia.

(b) *Municipal System.*—Markhaz town with Mamur and Town Council.

24 Police and 26 Ghaffirs.  
Steam and motor fire engines.

(c) *Houses and Streets, and suitability for Billeting.*—Many limestone buildings. Remainder mud huts.

(d) *External Communications.*—On Railway, Cairo—Zagazig. Mud roads to Cairo, Ismailia, Zagazig, Benha, etc. State telegraph office.

(e) *Population.*—17,000 approximately. All Moslems except 179 Copts, 9 British, 32 Greeks and 28 other foreigners. Native population somewhat unruly and hostile to foreigners.

(f) *Principal Buildings.*—Primary School (250 pupils), Markhaz Building with Rest House above. Irrigation Rest House, Missionary Buildings.

*Hospitals.*—One with 20 beds (will take 60).

*Banks.*—Nil.

*Factories and Works suitable for Repair of M.T.*—Nil.

(g) *Electric Power Supply.*—Power station in the centre of the town. One new engine of 100 h.p. and two old ones, each of 50 h.p. Direct current, 200 volts. Maximum load 450 kW. per day.

(h) *Water Supply.*—Pump with 16-in. pipe on Ismailia Canal. Water drawn from artesian wells below bed of canal. Pumped to overhead tank and supplied by gravity. No artificial filtration.

(i) *Sanitation.*—Nil.

(j) *Supplies, where drawn.*—Ample foodstuffs locally. Grain trade.

(k) *Vulnerable Points.*—Nil from point of view of protection by British troops, but in disturbed times military traffic from Ismailia might provoke hostility.

(l) *Aerodromes.*—Emergency Landing Ground 2 miles east of town.

### Damanhur

(a) *General Position, importance.*—30 miles south-east of Alexandria on the main Cairo–Alexandria Road.

Important cotton ginning centre.

(b) *Municipal System.*—Mudir of Province presides over Municipal Commission.

300 Police and Ghaffirs.

Fire-brigade has two motor engines.

(c) *Houses and Streets, and Suitability for Billeting.*—Town is divided into two parts by Egyptian State Railway. Western side is typical dirty native town with streets too narrow for wheeled traffic. East side contains several fine buildings suitable for billeting, all on northern outskirts. Streets are wider.

(d) *Internal Communications.*—No internal services.

(e) *External Communications.*—Important station on Cairo–Alexandria main line and junction for Disuq branch line. Tarmac road to Alexandria and good mud roads to Cairo and other towns. There is a half-hourly bus service to Alexandria.

(f) *Population.*—50,000 Moslems and intermixture of fellaheen and Bedu blood has produced a distinct type of local inhabitant. Inclined to be hostile to foreigners. Coptic and foreign population negligible. There is a British Consular Agent.

(g) *Principal Buildings.*—Mudirya, three Government Schools, Rest House, four Ginning factories, Theatre, Sporting Club (could be converted into a hospital).

*Hospitals.*—Government Hospital—30 beds—could be made suitable for Europeans.

*Banks.*—National.

*Factories and Engineering Works suitable for Repair of M.T.*—Delta Light Railway repair shops.

(h) *Electric Power Supply.*—Power station at north corner of town on Khatatba Canal, three oil-driven Sulzer Diesel engines of 300, 750 and 150 h.p. respectively. Three-phase alternating current at 200 volts. Supplies electric light.

(i) *Water Supply.*—The Khatatba Canal. Pure and adequate pumping station and power station. Two 40-h.p. Sulzer Diesel engines with a 15-ft. "Steel Jewel Gravity filter." Water passed through sand and gravel and then chlorinated.

(j) *Sanitation*.—Drainage scheme completed 1932. Better class houses are connected to main sewers.

(k) *Supplies, where drawn*.—Market town. Plentiful supply of cereals, meat, eggs, milk and poultry.

(l) *Vulnerable Points*.—Power station and water-works. Railway station.

(m) *Landing Grounds*.—Nil.

### Damietta

(a) *General Position, importance*.—On the Damietta branch of River Nile, 11 miles from the sea. Summer-time port for small ships engaged in timber and fruit trade with Syria, Greece and Turkey. In winter the weather makes the bar impracticable except for small fishing boats. No longer a town of any great importance.

(b) *Municipal System*.—Muhafza (Governorate).  
86 Police and 54 Ghaffirs.

(c) *Houses and Streets, and suitability for Billeting*.—An ancient town, containing some fine buildings. Main streets wide and well paved.

(d) *External Communications*.—Light railway on right bank of Nile, and E.S.R. on left bank to Mansura. Roads run adjacent to the railways. A daily service on Lake Manzala connects to Mataria and Port Said. State telegraph office.

(e) *Population*.—35,000, mainly Moslem, with a few Greeks, Copts, etc. Chiefly engaged in the cultivation and milling of rice.

(f) *Principal Buildings*.—Governorate. Three Schools.  
*Hospitals*.—Government Hospital, 125 beds;  
Ophthalmic Hospital.

(g) *Electric Power Supply*.—Under Municipal control. Alternating, 3-phase, 3-wire, frequency 50 at 200 volts.

(h) *Water Supply*.—Under Municipal control. Water is taken from River Nile when high, and at other times from Sweet Water Canal. It is then mechanically filtered.

(i) *Supplies*.—Centre of large fish-salting industry.

(j) *Vulnerable Points*.—There is an iron bridge over the Nile suitable for all types of M.T.

(k) *Aerodromes*.—Nil.

### Kafr El Zaiyat

(a) *General Position, importance.*—On the east bank of the Rosetta branch of the Nile, 54 miles from its mouth. As the point where the main line railway from Cairo to Alexandria crosses the Rosetta branch of the river, it is of strategic importance.

(b) *Municipal System.*—Mixed Municipal Commission, under presidency of the Mamur.

Markhaz Town. 46 police and 90 ghaffirs.

(c) *Houses and Streets, and suitability for Billeting.*—Mainly mud houses and generally unsuitable for billeting. Main road through the town is wide, but most streets are narrow.

(d) *External Communications.*—On main railway and road Cairo–Alexandria. State telegraph office.

(e) *Population.*—Approximately 9,000.

(f) *Principal Buildings.*—Six cotton ginning factories.

*Hospitals.*—Ophthalmic Hospital, Children's Hospital.

*Banks.*—National Bank of Egypt (sub-agency).

*Factories and Works suitable for the Repair of M.T.*—Nil.

(g) *Electric Power Supply.*—Municipal power station at south end of town on main Cairo–Alexandria road. Two Diesel engines. Supply continuous, 3-phase, 3-wire, frequency 50 at 220/440 volts.

(h) *Water Supply.*—Drawn from artesian wells yielding 134,000 gallons daily.

(i) *Sanitation.*—An up-to-date sewerage scheme was completed in 1932. It includes sewage farm, fed by compressed air. Sewers have been laid in the main streets.

(j) *Supplies, where drawn.*—Ample local resources.

(k) *Vulnerable Points.*—Railway bridge over River Nile carries main line Cairo–Alexandria, double track, with roadway on either side, and is of vital importance. Maximum load of roadways, 2 tons. Maximum width of vehicles, 6 ft. 2 in. In an emergency tanks could cross on central railway track at some risk to permanent way. (See also Chapter XIII—Railways, para. 9.)

(l) *Aerodromes.*—Nil.

### Ismailia

(a) *General Position, importance.*—North-west corner of Lake Timsah, approximately half-way between Suez and Port Said, and seat of control of the Suez Canal Company. British Military Station at Moascar Camp and R.A.F. Aerodrome.

(b) *Municipal System.*—Ismailia is part of the Suez Canal Governorate, the seat of which is at Port Said. There is a resident Mamur.

90 police and 165 ghaffirs.

One motor fire engine (property of Suez Canal Co.).

(c) *Houses and Streets, and suitability for Billeting.*—Except for small native quarter to the west of the town, houses are well-built in shady avenues and are suitable for billeting. Bulk of the roads are tarmaced and fit for heavy traffic.

(d) *Internal Communications.*—Good roads in town and local bus service—vehicles unreliable except for two new 20-seater buses, property of Timsah Garage.

(e) *External Communications.*—Junction of main Cairo-Port Said railway with that to Suez. Good roads to Cairo, Port Said and Suez. Sweet Water Canal links with Delta canal system. State telegraph office.

(f) *Population.*—25,000, including approximately 900 Copts, 350 British, 850 French, 1,000 Italians, 2,000 Greeks. Bulk of foreigners are in employ of Canal Company.

(g) *Labour.*—Within reasonable limits, there is no difficulty in recruiting labour, both skilled or unskilled, by normal R.E. procedure.

(h) *Principal Buildings.*—Canal Company's Offices, Ismailia Palace Hotel (adjoining railway station), houses of senior officials. The tower of the new Garrison Church in Moascar Camp gives a commanding view over the whole of Ismailia and surrounding country.

*Hospitals.*—Suez Canal Company's Hospital (150 beds) suitable for Europeans, but primarily intended for employees.

*Banks.*—Ottoman, National.

*Factories and Workshops suitable for Repair of M.T.*—Timsah Garage, on small scale.

*Abattoirs.*—One under municipal control, clean, and good water supply. Slaughtering for civilian

needs takes place in the afternoon and the whole abattoir could be made available for military use earlier in the day.

*Bakeries.*—Two, one machine and the other hand, not very clean but could be improved under military control. Could produce 9,000 and 2,200 lbs. of bread per day without interfering with civil requirements.

*Cold Storage.*—One installation of two chambers, one of which could be reserved for Army use without inconvenience. Cubic capacity, 103·95 and 180·18 cubic metres.

(i) *Electric Power Supply.*—(i) Power station on east side of Port Said branch of the Sweet Water Canal supplies electricity to the town and Suez Canal Company and R.A.F. Wireless Station in Spinney Wood. Property of Electricity and Ice Supply Company. 800 kW. of Diesel plant generating 3-phase alternating current at 3,000 volts, 50 cycles. Maximum demand 400 kW. High voltage distribution is by underground cable except for overhead wire to Spinney Wood. Low voltage distribution at 220 volts, 3-wire, are mostly overhead.

Ice factory in same grounds uses 80 kW. and can produce 5 tons of ice a day.

(ii) Oil engine power station, 270 kW. (War Department) at Moascar, supplies the camp and R.A.F. Aerodrome, etc. Transmission 3,000 volts underground cable, overhead distribution 380–220 volts, 4-wire to Moascar and 220 volts 3-wire in aerodrome. Maximum demand 170 kW. New plant would be necessary for any big increase in load.

(j) *Water Supply.*—(i) Suez Canal Company's Water-works on south bank of Ismailia Canal supplies the town. Puech-Chabal method of purification. Coagulant, permanganate of potash. Water flowing through three gravel and sand filters in series. Chlorinating apparatus available in event of epidemic. Pumping plant, partly driven by oil and petrol engines, partly hydraulic, is worked by canal. Operates at 70–75 foot-head and supplies overhead storage tanks holding 230,000 gallons. Maximum output 660,000 gallons a day, which in 1933 almost equalled demand.

(ii) War Department Water-works, Nefisha, 3 miles south of town. Electricity-driven from W.D. power station. Water from Sweet Water Canal. Coagulant, alum. Settlement and filtration in rapid sand filters. After chlorination, pumped to reservoir in camp of 300,000 gallons capacity.

Distribution by gravity. Pumping head 100 ft. Water-works can pump and filter 360,000 gallons per day, but storage capacity inadequate. Maximum daily demand in 1933—200,000 gallons.

(k) *Sanitation*.—Modern system, except in native quarter.

(l) *Supplies, where drawn*.—Imported from Eastern Delta and narrow strip of cultivation bordering Sweet Water Canal.

(m) *Vulnerable Points, Bridges, etc.*—(i) Road bridges :—

Marine	..	Maximum load 3 tons, width 12 ft.
Chevalier Island		Maximum load 3 tons, width 12 ft.
Moascar	..	Maximum load 12 tons, width 16 ft.

(ii) Power stations and water-works.

(n) *Aerodromes*.—R.A.F. : Abu Suweir, 9 miles west of Ismailia ; Ismailia, 2 miles west of town (*see* Appendix 5).

### Luxor

(a) *General Position, importance*.—Important winter tourist centre on right bank of the River Nile ; 450 miles south of Cairo and 12 hours' train journey.

(b) *Municipal System*.—Local Commission.

57 police and 53 ghaffirs.

One motor fire engine and escape of modern type.

(c) *Houses and Streets, and suitability for Billeting*.—The town itself is long and straggly and consists chiefly of native houses of mud-brick, though there is now some rebuilding in stone, which affords good billeting for two battalions of infantry.

The streets, except for the thoroughfare from the station to the river front and the river frontage itself, are narrow and unmetalled and would not stand up to the strain of modern transport.

(d) *External Communications*.—Rail to Cairo and Shellal. Indifferent road northwards to Asyut and southwards to Idfu. State telegraph office.

(e) *Population*.—Permanent population approximately 27,000, mainly Moslems, with 2,000 Copts and European population of some 35 Greeks, five Italians, five Americans and two English.

(f) *Principal Buildings*.—Post Office, five schools.

*Hotels*.—Winter Palace (250 beds) has its own lighting and filtering plant, Luxor, Savoy (120 beds), Grand, Karnak, Grande Pension and Hotel des Familles.

*Banks.*—National Bank of Egypt.

*Hospitals.*—American Mission (five doctors, 50 beds), suitable for European occupation. Hotels could also be used as hospitals.

*Factories and Works suitable for Repair of M.T.*—Nil.

(g) *Electric Power Supply.*—The power station, a modern installation,  $\frac{1}{4}$  mile south of Luxor on the River Nile, supplies both water and electricity. It has three Diesel generating sets totalling 450 kW. to supply a maximum demand (in 1934) of 125 kW. Distribution is by means of 3-phase, 3-wire, overhead lines at 100 volts.

(h) *Water Supply.*—Water is filtered and pumped by electrically-driven turbine pumps. The maximum filter output is 15,000 gallons an hour. The main supply tank holds 66,000 gallons.

(i) *Sanitation.*—Hotels have all modern conveniences and drain direct to the Nile. Otherwise, sanitation primitive.

(j) *Supplies, where drawn.*—Hotels grow their own vegetables. A limited quantity of sheep and goats can be obtained. Bulk of food imported.

(k) *Vulnerable Points.*—Power station and water-works.

(l) *Aerodromes.*—Imperial Airways' landing ground about 2 miles north of Luxor. Actually any ground can be utilised in the vicinity in an emergency.

### **Mansura**

(a) *General Position, importance.*—On east bank of the River Nile about 50 miles from Damietta and 81 miles from Cairo. Railway junction. Fifth largest town in Egypt.

(b) *Municipal System.*—Mudir presiding over International Commission.

300 police and ghaffirs.

Fire-brigade with up-to-date motor engines and appliances.

(c) *Houses and Streets, and suitability for Billeting.*—Most houses brick built except one quarter mainly mud huts. Nile frontage and better parts of the town contain modern buildings suitable for billeting. Town is irregularly built, but principal streets are broad and good.

(d) *Internal Communications.*—Local bus service. Vehicles unreliable.

(e) *External Communications*.—Important branch line junction of E.S. Railway system. Good mud roads radiate to adjacent Delta towns and there is a bus service to Cairo. Junction of Mansuriya Canal with Damietta branch of the River Nile. Bahr Saghir gives access to Lake Manzala. State telegraph office.

(f) *Population*.—70,000 Moslems, 2,000 Copts, 2,000 Greeks, 1,000 Syrians, and 100 Europeans—of which about 30 are British and including a British Consular Agent.

(g) *Principal Buildings*.—Mudiriya, Municipal Buildings, Mixed Courts, Government Secondary and Primary Schools, Girls' School, Greek School, Irrigation Department, Survey Department, Société Misr Cotton Ginning Factory, Mansura Engineering Works, Rosetta and Alexandria Rice Mills, Ltd. (large factory). Various bank buildings.

*Hospitals*.—Egyptian Government Hospital (200 beds) could be used by Europeans. Ophthalmic Hospital (12 beds) could be made suitable.

*Banks*.—Barclays, National, Ottoman, Ionian, Misr, Commerciale Italiano, Italo Egiziano, Credit Agricole.

*Factories and Engineering Works suitable for Repair of M.T.*—Mansura Engineering Works.

(h) *Electric Power Supply*.—Power for electricity and water supply is taken from the North Delta Electricity Supply System at 33,000 volts and distributed at 220 volts A.C. The local sub-station, constructed in 1932, which can produce its own power in the event of the former breaking down, is situated on the Mansuriya Canal about  $\frac{3}{4}$  mile from its junction with the River Nile.

(i) *Water Supply*.—Source—Mansuriya Canal. Water-works same site as power sub-station. Pure and adequate. There is a small compression tank in the centre of the town.

(j) *Sanitation*.—Satisfactory in European quarter. Sewage pumped to sewage farm outside the town. In the native quarter sewage is removed by municipal carts.

(k) *Supplies, where drawn*.—Meat, flour and vegetables abundant locally.

(l) *Vulnerable Points, Bridges, etc.*—Railway and road bridge over River Nile to Talkha. Maximum load on roadways, 3 tons. Maximum width of vehicles, 6 ft. 2 in.

Power sub-station and water-works.

(m) *Aerodromes*.—Nil.

### Medinet El Faiyum

(a) *General Position, importance.*—Centre of Faiyum Province, about 25 miles west of the Nile.

(b) *Municipal System.*—Mudiriya Town. Mixed commission.

187 police and 140 ghaffirs.

Two motor fire-engines.

(c) *Houses and Streets, and suitability for Billeting.*—Principal streets are wide and contain brick houses. All important business is conducted on two streets, one on each side of the large Bahr Yusef Canal, each about  $1\frac{1}{4}$  miles long. The majority of the town consists of old narrow streets with mud houses and, with the exception of the American Mission building on the outskirts of the town, generally unsuitable for billeting. There are several open spaces in the town where tents could be erected.

(d) *External Communications.*—Railway to Wasta links with main E.S.R. line to Upper Egypt. Macadamised road links provincial system with Nile Valley Road via El Riqqa and mud road, partly tarmaced via Beni Suef, whilst there is direct connection with Cairo by Desert road (*see* Chapter XI—Roads, para. 6 (f)). 60 buses of the Kfoury Bus Company are based on the Faiyum and provide transport to Cairo, Beni Suef, etc. State telegraph office.

(e) *Population.*—About 56,000, almost entirely Moslem. 32 British and Americans, six French, 71 Italians, 216 Greeks.

(f) *Principal Buildings.*—Mudiriya, American Mission, five cotton ginning factories, two fair machine shops with small foundries attached, one technical school with good machine shop and foundry.

*Hospitals.*—Government Hospital—40 beds, could accommodate 60 beds; Ophthalmic Hospital—10 beds, could accommodate 30 beds.

*Banks.*—National, Barclays, Ionian, Italo Egiziano, Commerciale Italiana per l'Egitto, Misr, Nationale de Grece.

*Factories and Works suitable for Repair of M.T.*—Nil.

(g) *Electric Power Supply.*—A power station of 1,320 kW. capacity, containing two water turbines and an oil engine, is situated at Deir El Azab Desert, 4 miles south of the town. It generates at 3,150 volts and transmits to eight substations by cable and overhead line. The low voltage

distribution is overhead, 3-phase, 3-wire, 210 volts, 50 cycles a second. The load, apart from the water-works, is almost entirely lighting and seldom exceeds 400 kW.

(h) *Water Supply*.—Water is obtained from the Bahr Yusef canal, the water-works being 600 yards east of the town. After filtration in slow sand filters and chlorination, electrically-driven centrifugal pumps force the water into a reservoir of 160,000 gallons capacity against a head of 160 ft. Distribution thence is by gravity.

The capacity of the water-works is 47,500 gallons per hour and the maximum town demand in the summer of 1934 was 330,000 gallons in a day.

(i) *Sanitation*.—At present primitive. A drainage system is being laid down and will be completed in 1936.

(j) *Supplies, where drawn*.—Centre of large agricultural district.

(k) *Vulnerable Points*.—Power station and water-works.

(l) *Aerodromes*.—Deir El Azab Desert, approximately  $4\frac{1}{2}$  miles south of the town near the hydro-electric plant, is suitable for landing ground.

### Mehalla Kubra

(a) *General Position, importance*.—Situated practically in centre of Delta on railway and main road between Tanta and Mansura. Important cotton and ginning centre.

(b) *Municipal System*.—Mamur and mixed municipal commission, on which Europeans are represented.

44 Police, 127 Ghaffirs and fire-brigade with motor engine and modern appliances.

(c) *Houses and Streets, and suitability for Billeting*.—Mainly native houses of mud and burnt brick, but some well-constructed blocks of flats and houses in brick and concrete are suitable for billeting, as are the cotton ginning factories and spinning mill of Société Misr. Streets narrow and bad.

(d) *External Communications*.—E.S. Railway to Tanta for Main Cairo-Alexandria line, and to Talkha for Damietta and Mansura. Fair to good mud roads to neighbouring Delta towns. State telegraph office.

(e) *Population*.—55,000, mostly Moslems. A few Copts, Syrians, Greeks. Also British, Italians, Jews and Swiss during winter cotton season. Factory hands are potential source of trouble.

(f) *Principal Buildings.*—Spinning mill of Société Misr, ginning factories of Alexandria Commercial Co. (dominates power station), Associated Ginners, Peel & Co. (commands railway station), Post and Telegraph Office, Markhaz, French African Mission, Egyptian Orphanage, Government Weaving School.

*Hospital.*—One of 45 beds situated outside the town to the north-east, could be used for Europeans in emergency.

*Banks.*—National, Ionian, Commerciale Italian, Misr, Credit Agricole, Cassa di Sconto di Risparmio.

*Factories and Works suitable for Repair of M.T.*—Spinning and ginning factories mentioned above could be adapted.

(g) *Electric Power Supply.*—Power station, with waterworks, on the Bahr El Malleh, near Alexandria Commercial Ginning Co. Factory south of the town. Diesel engines with a total capacity of 750 kW. generate electricity, 3,000 volt underground cables to transformer sub-stations. Thence distribution by overhead lines 200 volt, 3-phase, 3-wire, 50 cycles. Maximum demand 250 kW.

(h) *Water Supply.*—Source—Bahr El Malleh. Filtered through slow sand filters and chlorinated before pumping to high level reservoir of 1,100,000 gallons capacity. Main pumps electrically driven. Can raise 48,400 gallons per hour against a head of 140 ft. Total filters output the same. Maximum summer demand 550,000 gallons per day.

(i) *Sanitation.*—Cesspit for better houses and factories. Poorer quarters no system. A drainage system is under consideration.

(j) *Supplies, where drawn.*—Agricultural produce from district. Fish from Damietta and Lake Brulos.

(k) *Vulnerable Points.*—Power station and waterworks.

(l) *Aerodromes.*—Nil.

### Minya

(a) *General Position, importance.*—On west bank of the River Nile. Cotton ginning centre. 150 miles south of Cairo.

(b) *Municipal System.*—Mudir and mixed municipal commission (four Europeans and four Egyptians).

100 Police and 100 Ghaffirs.

One steam and two motor fire engines.

(c) *Houses and Streets and suitability for Billeting.*—Native quarter with narrow streets at south end of the town. Town developing rapidly and north end contains many well built houses, especially streets from station to Nile and along Nile front. This end suitable for billeting particularly Sporting Club and Secondary School outside to north end of town.

(d) *Internal Communications.*—Four reliable buses.

(e) *External Communications.*—On E.S. Railway main line to Upper Egypt. On main road Cairo-Asyut, and Ibrahimiya Canal. State telegraph office.

(f) *Population.*—45,000, of which 15,000 are Copts, 30 British. 500 other Europeans, mainly Greeks.

(g) *Principal Buildings.*—Sporting Club, Secondary School for 400–500 boys, Prison, Mudiriya, three cotton ginning factories, two hotels.

*Hospitals.*—

Government Hospital	..	100 beds	} All suitable for Europeans.
Government, Fever	..	20 beds	
Ophthalmic Hospital	..	24 beds	

*Banks.*—National, Barclays, Ottoman, Ionian, Commerciale Italian, Misr, Credit Agricole.

*Factories and Works suitable for Repair of M.T.*—Nil.

(h) *Electric Power Supply.*—Combined power station and water-works at extreme north end of town. Capacity 657 kW. of which 25 kW. are used for pumping water. 50 cycle, 3-phase, alternating current is generated and transmitted at 3,100 volts by underground cable. Overhead distribution 3-phase, 3-wire at 200 volts. Maximum demand 300 kW.

(i) *Water Supply (see also (h) above).*—Output limited by capacity of electrically driven pumps which can deal with 42,000 gallons an hour at head of 123 ft. Overhead storage for 155,000 gallons. Maximum demand 880,000 gallons a day.

(j) *Sanitation.*—No drainage system. Large houses have cesspits.

(k) *Supplies.*—Self-supporting.

(l) *Vulnerable Points.*—Power station and water-works.

(m) *Aerodromes.*—Misr Airworks have landing ground on race-course. Landings have been made on gezira in the Nile at low level.

### Mit Ghamr and Zifta

(a) *General Position, importance.*—Twin towns on right- and left-hand banks of the Damietta branch of the River Nile. 20 miles north of Benha. E.S. Railway branch line Zagazig-Tanta crosses the river between these two towns.

(b) *Municipal System.*—

*Mit Ghamr.*—International Town Council under Mamur of Markhaz.

24 Police and 46 Ghaffirs.

One motor Fire Engine.

*Zifta.*—Local Commission under Mamur of Markhaz.

30 Police and 30 Ghaffirs.

(c) *Houses and Streets, and suitability for Billeting.*—Along the Nile at Mit Ghamr, houses are stone or brick built and the road is wide and tarmaced. Otherwise, generally speaking, the majority of houses are mud brick and streets are narrow and tortuous. Neither town is suitable for billeting and through traffic should be provided with a guide with local knowledge.

(d) *Internal Communications.*—See (c) above.

(e) *External Communications.*—Both towns on E.S. Railway branch line Zagazig-Tanta, whilst Zifta is junction for branch line to Benha. Fair to good mud roads radiate to adjacent Delta towns. State telegraph office in both towns.

(f) *Population.*—

*Mit Ghamr.*—20,000 approximately, including 2,200 Copts, 187 Greeks, 32 British subjects.

*Zifta.*—24,000, including 1,550 Copts, 187 Greeks, 37 British subjects.

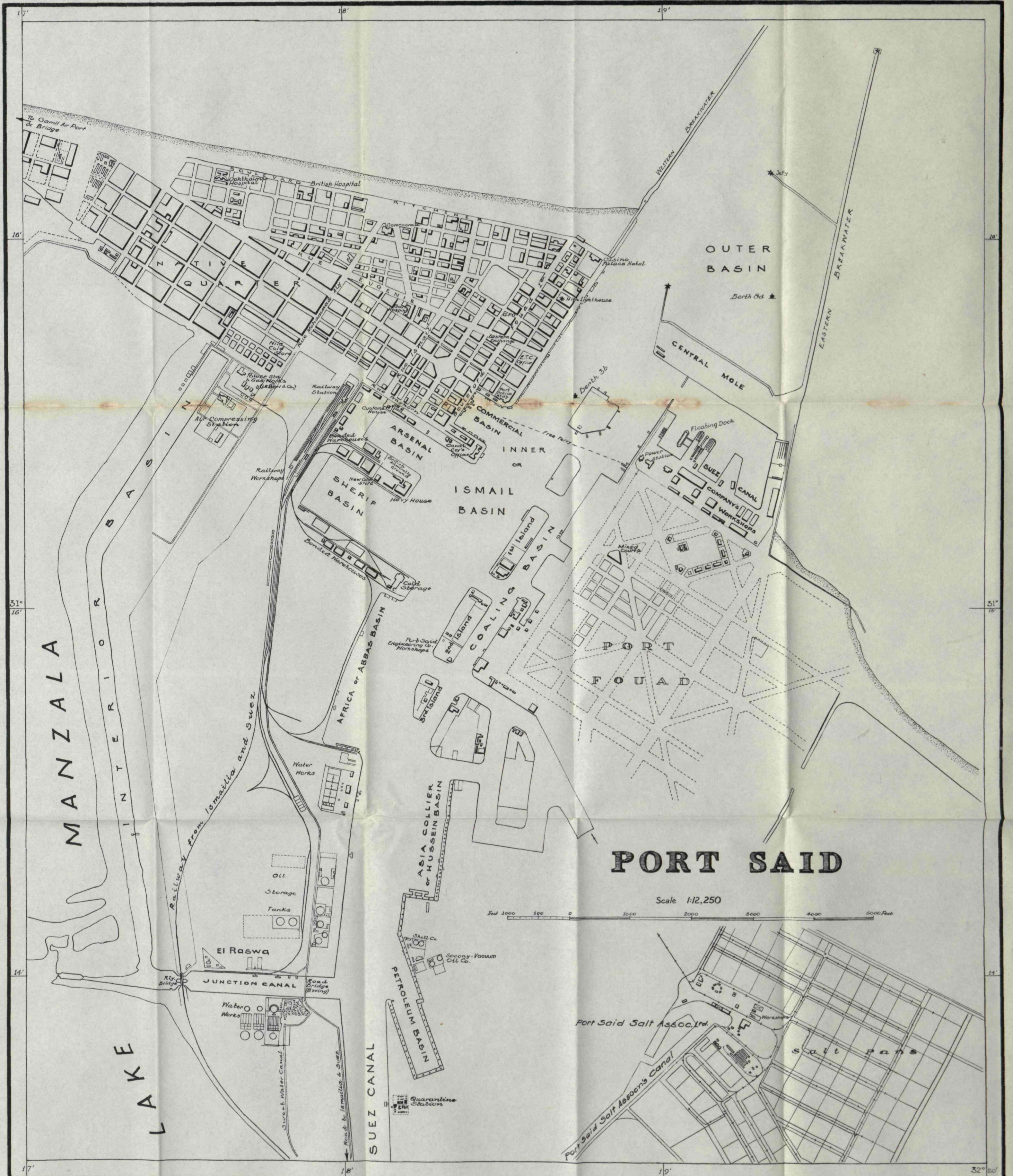
(g) *Principal Buildings.*—

*Hospitals.*—*Mit Ghamr.*—Government Hospital, 40 beds.

*Zifta.*—Government Hospital, 30 beds, could be enlarged to 45.

*Banks.*—*Mit Ghamr.*—Misr.

*Factories and Workshops suitable for Repair of M.T.*—Delta Light Railway Workshops, Mit Ghamr, could undertake everything but welding.



(h) *Electric Power Supply*.—Power station in middle of Mit Ghamr supplies both towns. Three vertical Diesel engines, one of 300-h.p. and two at 170-h.p. each. Generates alternating current at 220 volts, 50 kilocycles. Maximum output 600 kW. per day. Load mainly lighting.

(i) *Water Supply*.—Power from (h) above. Water filtered from River Nile. Capacity 250 cubic metres per hour. Maximum demand 500 cubic metres per day.

(j) *Sanitation*.—Nil.

(k) *Supplies*.—Ample local supplies.

(l) *Vulnerable Points, Bridges, etc.*—Railway and road bridge across Damietta branch of River Nile. Maximum load on roadways, 2 tons. Maximum width of vehicle, 6 ft. 2 in.

Power station.

(m) *Aerodromes*.—Nil.

## Port Said

(See Plan No. III.)

(a) *General Position of Town—Importance*.—On the west bank of the Suez Canal at the Mediterranean entrance on a sandbank entirely surrounded by water, leaving little scope for expansion, except towards Gamil to the west of the native quarter along the shore. The new suburb of Port Fouad (occupied almost entirely by the Canal Company personnel) is on the eastern side. The harbour works, etc., are described in Chapter X—Ports.

(b) *Municipal System*.—The Governor of the Mahafza, which includes Ismalia, is assisted by a sub-Governor of Port Said and an International Commission. The Port itself belongs to the Suez Canal Company.

The Port Said detachment of the Suez Canal Police consists of 560 of all ranks. The Commandant, Assistant Commandant and six other Officers are British, and there are in all 27 European Officers and men. Included in the above figures are one Officer and 31 men of the Mounted Troop and the Guard Company of two Officers and 178 other ranks.

The Fire Brigade, which is part of the Police Force, consists of one Superintendent and 57 other ranks, three motor fire engines of various makes, two fire escapes and other appliances.

(c) *General Type of House and Streets, and suitability for Billeting.*—European and native quarters are divided by the wide Mohamed Ali Street, running north to south. Native quarters to the west of this line—mud and lath and plaster houses with narrow streets. East of Mohamed Ali Street, modern buildings of stone and brick and wider streets. Though suitable for European habitation there is not much space, and billeting might interfere with the work of the Port.

Suitable areas for accommodating troops under canvas exist :—

- (i) Between the Interior Basin and the railway.
- (ii) Adjacent to the Port Said Salt Association Works on the east bank of the canal. This site can be approached by road and water transport from the port.

(d) *Internal Communications.*—A fleet of 12 new Chevrolet 30-seater buses operates in the town. These were first licensed in 1937, and could carry 30 fully equipped men. 125 registered taxis.

(e) *External Communications.*—Railway main line to Kantara for Palestine and to Ismailia for Cairo and Suez.

A very good tarmac road runs to Ismailia along the west bank of the Suez Canal ; this is the only approach by road.

A road bridge is being constructed (February, 1937) over the Wadi Gamil, and is nearing completion. The road to the Gamil Air Port will eventually be continued to join Port Said with Damietta. This will greatly decrease the distance and time required to reach Alexandria.

There is easy access to the Arab Town by boat across the Lake Manzala.

(f) *Population.*—Exceeds 100,000 of which about 20 per cent. are Europeans, chiefly Greeks, Italians and Maltese British.

(g) *Labour.*—Unskilled labour is readily available as elsewhere in Egypt, but the average wage appears higher and up to Pt. 10 per day. Labourers will work up to 10 hours per day without relaxing under supervision.

The following are the statistics of the skilled labour :—

Trade.	Nos. avail- able.	Hours of work per day.	Wages.
<i>(i) Engineering</i>			
<i>Mechanical and Electrical :—</i>			
Graduates of the Technical Schools.	60	10	Pt. 15
Electricians .. ..	350	8	Pt. 25
Tinsmiths .. ..	150	10	Pt. 13
Blacksmiths .. ..	60	12	Pt. 15
Carpenters .. ..	2,500	12	Pt. 20
<i>(ii) Motor Transport</i>			
Lorry drivers .. ..	30	14	Pt. 20
Bus drivers .. ..	60	9	Pt. 12
Chauffeurs .. ..	30	12	£E.3 per month
Taxi drivers .. ..	200	12	Pt. 10
Mechanics .. ..	65	12-14	Pt. 7-15
<i>(iii) Transport Drivers and Carriers</i>			
Carters .. ..	500	12	Pt. 15
Cabmen .. ..	300	12	Earn about £E.4-5 per month.
<i>(iv) Docks and Shipping</i>			
Mooring boats ..	195	24 hours on, 24 hours off.	Pt. 10
Launch drivers ..	270	do.	Average Pt. 350-450 per month.
Boatmen .. ..	450	12	Pt. 10
Coalheavers (loading)	3,300	No fixed hours.	Pt. 5 for every 5 working hours.
Coalheavers (dis- charging).	700	do.	Pt. 15 for every 12 working hours.
Porters .. ..	1,700	do.	Pt. 12 for every 6 working hours.

The above figures do not include permanent employees of the Suez Canal Company.

(h) *Principal Buildings, Factories and Workshops.*—  
 (i) *Government, Municipal Buildings, Foreign Consulates, etc.*—Offices of the Suez Canal Company, Navy House, Governorate, Mixed Courts Port Fouad, Port Police Buildings (the most up-to-date Police building in Egypt; it is surmounted by an observation tower giving a fine view over the port), Casino Palace Hotel, Eastern Exchange Hotel.

(ii) *Hospitals.*—British Hospital, 70 beds, suitable for Europeans.

Egyptian Government Hospital, 200 beds, of which 50 are suitable for Europeans.

Ophthalmic Hospital, 200 beds, very modern.

Fever Hospital, 30–40 beds, suitable for Europeans.

Casino Palace Hotel and the new quarantine station on east bank, to south of Port Fouad, would make suitable emergency hospitals.

(iii) *Factories and Engineering Works suitable for Repair of M.T.*—Suez Canal new workshops at Port Fouad.

Several large and well-equipped garages.

(iv) *Banks.*—National, Barclays, Banque d'Athens, Banco Italian Egiziano, Credit Lyonnaise, Comptoir, Ottoman—all in Boulevard Fuad I<sup>er</sup>.

(i) *Transport Vehicles.*—

Buses	..	32	Of which it is estimated that 60 per
Lorries	..	64	cent. would be in running order at
Private cars			any given moment. (Note.—The
and taxis		800	number of M.T. vehicles increase
			every year.)

(j) *Electric Power Supply.*—Two systems :—

(a) Power supply controlled by Lebon & Cie. (To be taken over by the Municipality on 1st January, 1938.)

1,800 kw. oil engine power station west of railway station. Supplies town lighting and power at pressure of 181/105 volts, 3-phase, 40 periods a second (neutral earths). Transformers fed at 2,000 volts.

Gas-works are in the same place under same control. Most streets are gas-lighted.

(b) Suez Canal Company.

Steam generating station in Port Fouad. Suez Canal Company sheds, navigating lights, etc., and waterworks at a frequency of 50 cycles a second.

Generating station produces 3-phase current 5,500 volts and contains 2,200 kw. of turbine plant. Distribution pressure 190-110 volts, 3-phase, 4-wire (neutral earth).

Both the above stations have a large reserve capacity.

(k) *Water Supply*.—From Sweet Water Canal. Water-works 2 miles south of town on Canal de Junction between Lake Manzala and Suez Canal. Can supply 440,000 gallons per hour which is nearly double demand.

Supply controlled by Suez Canal Company. Pumps electrically driven from Company's Power Station at Port Fouad.

(l) *Health and Sanitation Organization*.—Compressed air drainage system to more than half the town. Scheme for completing the sewage works has been submitted to Main Drainage Department.

(m) *Supplies, whence drawn*.—All food (except fish) by rail from interior or by water across Lake Manzala.

(n) *Vulnerable Points* (see also Plan No. III).—(i) Railway and road bridges over Junction Canal. (The only point of entry by land.)

(ii) Power stations.—Lebon et Cie. Suez Canal Company.

(iii) Water-works.

(iv) Oil installations on both sides of the basins.

(v) The accessibility to the Arab Town by boat from Lake Manzala.

(vi) The banks of the Sweet Water Canal adjoining the Lake Manzala and Suez Canal north of Kantara.

(o) *Sites suitable for Aerodromes*.—

*Port Fouad*.—R.A.F.

*Gamil*.—Civil aviation. Rough and unsuitable in wet weather, being renovated and enlarged to the size of 1,000 metres square. In February, 1937, the aerodrome was flooded and out of use but this is being remedied.

### Shebin El Kom

(a) *General Position, importance*.—On E.S. Railway line Cairo-Delta Barrage-Tanta, 40 miles north-west of Cairo. The main road between the Delta Barrage and Tanta and the important Bahr Shebin Canal pass through the town.

(b) *Municipal System*.—Mudir presiding over Municipal Council. 167 Police and 108 Ghaffirs.

Fire brigade, two modern motor engines and appliances, but no fire escapes. Watering carts used to convey water to outlying parts where there are no mains.

(c) *Houses and Streets, and suitability for billeting*.—Native quarter at south end; mud-stucco houses, narrow streets and lanes. In northern part houses are mostly well-built. Schools offer facilities for billeting. Streets wide, but only a few macadamised.

(d) *External Communications*.—E.S. Railway to Cairo and Tanta and to Benha via Minuf. Mud roads to adjacent towns. E.S. Railway runs a bus service to Cairo and there are a few privately owned buses. Bahr Shebin canal links with Delta Barrage, Zifta and Mehalla Kubra.

(e) *Population*.—Almost 40,000, majority Moslems, but includes a few thousand Copts and about 800 Europeans, mainly Greeks, 16 British, French and Italian communities very small.

(f) *Principal Buildings*.—Government secondary, agricultural, technical and two primary schools. All modern buildings with ample grounds.

Sporting club, ginning factory, Mudiriya, survey office, irrigation office, law courts.

*Hospitals*.—

Government Hospital, 50 beds. Suitable for Europeans after cleaning.

Ophthalmic Hospital, 20 beds. Suitable for Europeans after cleaning.

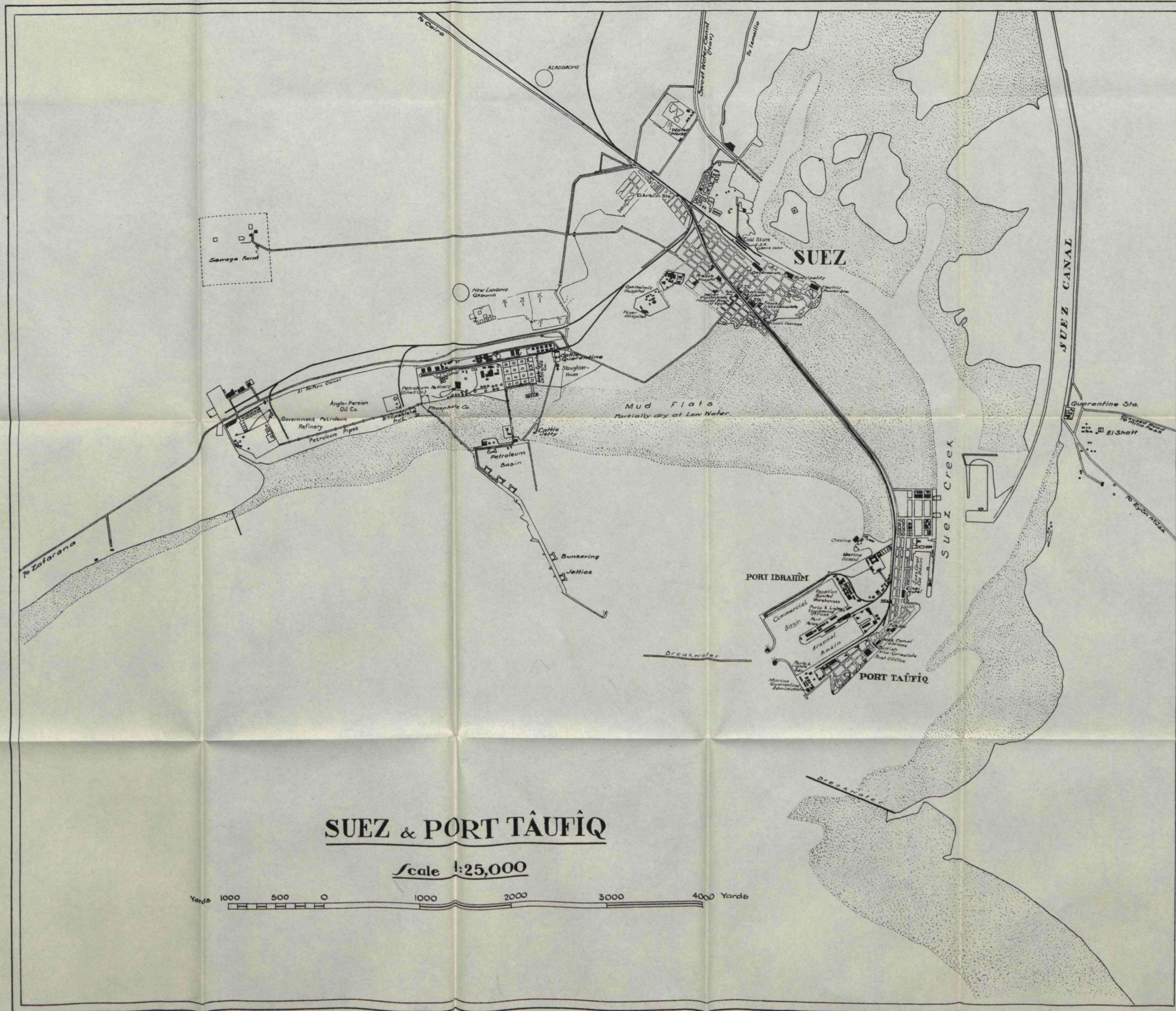
100 Convalescents from Gallipoli accommodated during war of 1914-18.

*Banks*.—National. Misr.

*Factories and Works suitable for Repair of M.T.*—Nil.

(g) *Electric Power Supply*.—Power station 100 yards south of railway station. Three Diesel engines, run on Mazout. 220, 150 and 150 h.p. each. Maximum capacity 250 kw. Transmission at 220 volts by cable, distribution by overhead wires. Load, mainly lighting.

(h) *Water Supply*.—Water-works 440 yards south of town on the Barrage road. Source of supply—River Nile, and a 50 ft. artesian well used when Nile is low. Two filter



beds, alum and chlorine used. Has an output of 70 cubic metres per hour. Water is pumped to filters, thence to storage tank of 300 cubic metres capacity and to town mains by electricity. Maximum demand 900 cubic metres per day.

(i) *Sanitation*.—Primitive. Principal buildings have cess-pits.

(j) *Supplies, where drawn*.—Local. Centre of agricultural district and market town.

(k) *Vulnerable Points*.—Power station and water-works.

(l) *Aerodromes*.—Nil.

## Suez

(See Plan No. IV)

(a) *General Position and Importance of Town*.—Suez, comprising the three towns of Suez proper, El Arbi'in and Port Tewfik, is of importance as the southern port of entry to the Suez canal and the site of large oil refineries. The harbour facilities of Port Tewfik and at the Petroleum basin are described in Chapter X—Ports.

Whereas Suez and El Arbi'in are situated on the mainland, Port Tewfik is an artificial island connected to the mainland by a causeway carrying two roads each capable of carrying two lines of traffic and a double line, standard guage railway.

(b) *Municipal System*.—Governorate local commission. Police force of 385 all ranks, includes two British officers. Four motor fire engines and up-to-date appliances.

(c) *General Type of Houses, and suitability for Billeting*.—Suez is divided into two approximate halves, by the railway and the main Cairo road. The part east of the railway is composed almost entirely of native lath and plaster houses, unsuitable for European occupation.

The part west of the railway has some houses of recent construction, suitable for European occupation, and there is room for further development in the area.

El Arbi'in is entirely composed of native lath and plaster houses quite unsuitable for European occupation. Port Tewfik is a modern brick built villa town, containing many buildings suitable for billeting. There is, however, ample room for camps and depôts in the flat desert north-west of the town.

(d) *Internal Communications*.—The roads in Port Tewfik are broad, straight and tarmaced, as are the two roads along the causeway, and the road to the oil refineries. The western road along the causeway is being widened (1937).

The streets of Suez and El Arbi'in are, generally speaking, narrow and rough, though the main street in continuation of the Cairo-Suez road is unmistakable and reasonably broad.

A local train service runs between Port Tewfik and El Arbi'in every half hour.

Local buses are native run and are extremely old and very unreliable.

There is a train service three times a day each way between Suez and Ismalia, connecting with the services to Cairo and Alexandria. A train service, twice a day each way, connects Cairo directly with Suez by the desert route.

A good road, the property of the Suez Canal Company, runs north to Ismalia. The main road to Cairo is tarmaced all the way and is now a first-class road, fit for all types of traffic.

Telegraph and cable communications are satisfactory.

(e) *Population*.—Almost 40,000, including 5,723 foreigners as follows :—British, 1,360 ; French, 284 ; Italians, 1,273 ; Greeks, 2,045 ; Turks, 42 ; Others, 719.

The majority of the European population is resident in Port Tewfik, where there are practically no native houses whatsoever, and consequently no risks of internal disorders. Europeans are mainly engaged in the service of the Suez Canal Company and oil companies. There is always some risk of internal disorders in Suez and El Arbi'in, but no more so than in other Egyptian towns.

(f) *Labour*.—Examination of the 1927 Census gives no satisfactory figures as to the numbers employed on the tasks of military interests. Unskilled labour is easily obtainable as elsewhere in Egypt. The Anglo-Egyptian Oil Fields and Shell Company employ about 1,000 men of whom 15 per cent. are skilled tradesmen and about 400 men are permanently employed on dock labour.

Motor transport labour, both for driving and maintenance, would probably have to be imported from Cairo if required, owing to the backward state of the trade. About 100 taxi drivers are, however, usually obtainable, owing to the tourist traffic to Cairo.

- (g) *Principal Buildings, Factories and Workshops.*  
 (i) *Government, Municipal and General.*

*Port Tewfik.*—Suez Canal Companies Offices, Marine School, Circle Internationale, Port and Lights, Administration Offices, Sinai Hotel, Offices of chief shipping agents in Avenue Helene.

*Suez.*—Governorate, Eastern Telegraph Company, Bel Air Hotel, Municipality French Convent.

- (ii) *Consulates.*—

Port Tewfik—British Vice-Consulate. Suez—Italian and French Vice-Consulate.

Belgium, Denmark, Spain, Portugal, Greece, Norway, Sweden and Holland are represented by Consular Agents, who are shipping agents in Port Tewfik.

- (iii) *Hospitals.*—

Government Hospital ..	80 beds.	} All suitable for use by Europeans
Fever Hospital ..	30 beds.	
Suez Canal Company Hospital ..	20 beds.	
French Hospital ..	13 beds.	

- (iv) *Factories, etc.*—There are none suitable for the repair of M.T.

*Anglo-Egyptian Oilfields and Shell Company's Refinery.*—Two miles south-west of Suez. Occupy the lay-out shown on Plan IV. The following notes are in amplification of the plan.

The whole area is surrounded by a high barbed wire fence, and watchmen are maintained on the entrances. There is practically no space between the fence and buildings which it surrounds. These buildings give a good command over the surrounding country.

The impression given by the plan that the surrounding country is mainly swamp is false. Normally these are dry, mud flats, and the enclosed area could therefore be approached across country, making sabotage possible by night unless the refinery was strongly guarded and patrolled. The circular storage tanks are painted white and show up vividly two miles from the shore. This effect could probably be neutralized by camouflage.

The refinery can turn out some two million gallons of petrol (all grades) per month, and a reserve stock of 4,000 tons of aviation petrol is maintained. Altogether there is tank storage for 119,000 tons of petrol and oil of all kinds.

*Government Petroleum Refinery.*—A road on the north side of the Shell Company's Refinery leads to the Government Refinery which is similarly fenced and guarded. It is comparatively unimportant and frequently closed down.

*Suez Canal Company's Quarries.*—The road continues to these quarries seven miles down the western shores of the Gulf of Suez. Capable of producing 50,000 tons of stone a month, they work to the needs of the company and seldom at full pressure.

*Misr Mother of Pearl Button Factory.*—A recently built factory with modern machinery, capable of producing 4,800 dozen buttons per day and employing some 500 men. Established by Société Misr Pour les Pêcheries, a subsidiary company of the Bank Misr.

(v) *Banks.*—National, Barclays.

(h) *Transport Vehicles.*—

M.T. reliable . . . Nil. About 100 touring cars are usually to be found in Suez. These are normally used for transporting tourists to Cairo. Obtainable through Cook & Sons.

Horsed Vehicles . . . A reasonable number could be hired.

(i) *Electric Power Supply.*—Suez Municipal Electricity Works at the Eastern Point of Suez Town, near the Coast-guard's building. Generating plant five oil engines of various types. Total capacity 1,117 kw. Transmitted at 3,100 volts and supplied to consumers by overhead line in form of 3-phase, 3-wire, 50-cycle, 200 volts alternating current. The Shell Company have their own plant, 220 volts D.C., which can expand to a limited extent.

(j) *Water Supply.*—Brought to Suez by the Sweet Water Canal from Ismailia. Works, about 2 miles from the town to the East of El Arbi'in railway station, are the property of Canal Co. Water is filtered through a series of tanks containing gravel. Capacity 5,000 tons in winter, 9,000 tons in summer. System is laid on to the houses. There are no wells or springs in Suez.

(k) *Sanitation.*—Water drainage system serves Port Tewfik, and all new houses in Suez and El Arbi'in must be connected to it. Dry earth system for older houses.

(l) *Supplies, where drawn.*—All food is brought from Cairo and the Delta.

(m) *Vulnerable Points*.—From an internal security point of view Port Tewfik may be considered invulnerable. It is European in character and the Causeway approach facilitates defence.

Vulnerable points in the Suez area are—

Oil Refineries (*see (h) (iii)*).

Electricity Works (*see (f)*).

Water Works (*see (k)*).

Road bridge over the Sweet Water Canal outfall giving access to the Ismailia Road.

E.T.C. Cable Hut.

(n) *Landing Grounds*.—There is an aerodrome just to the north of the junction of the Cairo-Suez and Ismailia-Suez railway lines. This is small but useable. There is an old hangar on the south end, and there is a watchman. This is not generally used at present (1937).

Shell Company have a landing ground just to the north of the refinery. There are no hangars, but Shell Company arrange a watchman for aircraft.

### Tanta

(a) *General Position, importance*.—52 miles north of Cairo. On main Cairo-Alexandria road and railway. Important railway junction, cotton ginning and marketing centre.

(b) *Municipal System*.—Mudir presiding over mixed Commission.

377 Police and 316 Ghaffirs.

Fire-brigade with three engines and up-to-date appliances.

(c) *Houses and Streets, and suitability for Billeting*.—Majority of the town typically native, with narrow winding streets. Traffic passing through should obtain a guide. Centre of the town a wide boulevard containing several well constructed buildings that could be used for billeting in an emergency.

(d) *External Communications*.—E.S. Railway main line to Cairo and Alexandria. Junction for branch line to Mansura, Zifta and Minuf. Lies on main road Cairo-Alexandria and good mud roads radiate to adjacent towns. Some local buses. State telegraph office.

(e) *Population*.—90,000, mainly Moslems, but including about 6,000 Copts and 4,500 foreigners, of whom 55 are British.

(f) *Principal Buildings*.—Club, six ginning factories, Government Schools and Orphanages.

*Hospitals*.—Government Hospital, 154 beds, could be made fit for Europeans. American Hospital, 100 beds, fit for Europeans.

*Banks*.—Barclays, National, Italo-Egiziano, Commerciale Italiana, Cassa di Sconte di Risparmio, Commercial Bank of Egypt, Credit Agricole, Ionian, Misr.

*Factories and Works suitable for Repair of M.T.*—Nil.

(g) *Electric Power Supply*.—Newly constructed power station with four engines, two of 1,300-h.p. run on oil, two of 700-h.p. on Qasid Canal about 600 yards south-east of town. Distributed in the form of 3-phase, 3-wire, 50-cycle, 220-volts, alternating current.

(h) *Water Supply*.—Drawn from Tereet El Qasid Canal. Supplemented by Artesian well from 25th December to 5th February. Filtering machines and two reservoirs.

(i) *Sanitation*.—Main drainage to about half the town. Remainder cleared by sewage companies.

(j) *Supplies, where drawn*.—Centre of agricultural district. Ample local reserves.

(k) *Vulnerable Points*.—Power station, water-works, railway station.

(l) *Aerodromes*.—Nil.

### Zagazig

(a) *General Position, importance*.—About 50 miles north east of Cairo on main Cairo-Port Said Railway. Important railway junction.

(b) *Municipal System*.—Mudir presiding over mixed Commission of four Egyptians and four Europeans.

170 Police, 400 Ghaffirs and a detachment of Camel Corps.

Fire-brigade with modern appliances.

(c) *Houses and Streets, and suitability for Billeting.*—Most of the houses are native type and poorly built. Recently a better class of house has been constructed. Only a small number are suitable for billeting. The Secondary School is built on the barrack system and was used as such during the war. Streets broad and in good condition. Bulk of principal buildings in vicinity of Bahr Muweis Canal.

(d) *External Communications.*—E.S. Railway main line to Cairo and Ismailia. Junction for branch line to Mansura, Zifta, etc. Good mud roads to adjacent towns. Canal to Ismailia and Benha. State telegraph office.

(e) *Population.*—About 75,000, of which 60,000 Moslems, 15,000 Copts, 100 British, 500 other Europeans.

(f) *Principal Buildings.*—Mudiriya, Government Secondary School, Government Primary School, two orphanages, Greek School, four ginning factories.

*Hospitals.*—Ophthalmic Hospital (2 miles out of town).

*Banks.*—Barclays, National, Commerciale Italiana, Italo Egiziano, Misr, Crédit Agricole.

*Factories and Works suitable for Repair of M.T.*—Nil.

(g) *Electric Power Supply.*—An up-to-date power station about 1 mile out of the town on Muweis Canal. Distribution single phase, 50-cycle, 3-wire, at 220-110 volts.

(h) *Water Supply.*—*Water-works at Power Station.*—Source—Muweis Canal, except during canal cleaning in January, when Artesian wells are used. After treatment at water-works, of good quality. Large water tower in town.

(i) *Sanitation.*—Cesspit, but drainage system under consideration.

(j) *Supplies—where drawn.*—Considerable local resources. Groceries imported. Market under control of Egyptian Markets, Ltd.

(k) *Vulnerable Points.*—Railway station, power station.

(l) *Aerodromes.*—Nil.

## CHAPTER V

**PHYSICAL GEOGRAPHY—GENERAL, NILE VALLEY  
AND DELTA**

(Reference Map No. 1.)

General.

Military Importance of the Nile Valley and Delta.

The Nile.

General Description. Physical Features of the Nile Valley. Floods and River Levels. Banks. Navigation. Dams and Barrages. Nile Crossings.

Irrigation Systems.

Delta Area.

General Description. Coastline. Lakes and Marshes, Rivers. Woods. Canals and Irrigation Systems and their effect on military movement, Water Supply.

**1. General**

Egypt proper may be briefly described as a vast area of desert, barren plateaux and mountains, intersected from north to south by the rich and fertile valley of the Nile. North of Cairo, the Nile bifurcates into the Rosetta and Damietta branches to enclose the equally fertile irrigated area known as the Delta.

Apart from the Delta and Valley of the Nile, there is to the west of the Nile, with its centre approximately 60 miles south-west of Cairo, an oval cultivated area known as the Faiyum.

The desert areas east and west of the Nile contain, especially the Western Desert, certain oases, sparsely watered, but capable of supporting a small semi-nomadic population.

Egypt is naturally divided into the following areas of distinct physical characteristics :—

The Valley and Delta of the Nile, the area in which the economic life of the country is centred .. .. .	Chapter V
The Eastern and Western Deserts, including the Faiyum and principal oases .. .. .	Chapter VI
The Province of Sinai .. .. .	Chapter VII

The coasts of Egypt are described in the Chapters pertaining to the areas in which they lie.

It has been found expedient to include in both Chapters V and VI various details which do not strictly fall under the heading of Physical Geography, and to make Chapter VII—Sinai, a complete report on that Province, which is in every material respect a country apart from Egypt.

## 2. Military Importance of the Nile Valley and Delta

The Nile Valley and Delta are of considerable military importance for the following reasons :—

(a) The River Nile is the main source of the agricultural industry, on which the life of the country depends.

(b) The restriction imposed on military movement by the few bridges over the River Nile south of Cairo, and the intersection of the Delta area by innumerable canals and irrigation channels fed from the river.

(c) The plentiful supplies of drinking water which the river makes available in a practically rainless country.

(d) The value of the River Nile and principal canals of the Delta area as navigable waterways.

## 3. The Nile

(a) *General Description* (see Map No. 1).—The Nile drains nearly the whole of North-east Africa, its basin extending over a million square miles. The White Nile really begins at Lake Victoria, but its furthest waters come from Lat. 4° S., near Lake Tanganyika. Between Lake Albert and Mongalla it is joined by numerous torrents, and from there to Khartoum by the Bahr El Ghazal, Bahr El Zeref (really only a branch of the main river) and the Sobat River.

The Blue Nile rises in Lake Tsana and is fed by some large rivers in Abyssinia, and by the Rivers Rahad and Dinder in the Sudan. It joins the White Nile at Khartoum. The only other tributary is the Atbara, which enters the Nile from the east at Atbara, 1,676 miles from the sea. The Atbara is dry for about eight months of the year. This and the Blue Nile contribute most of the mud and alluvial deposits which have created the Delta and are so important to the cultivation.

Between Khartoum and Aswan, there are six cataracts. The sixth is between Khartoum and El Damer, the fifth and fourth between Berber and Dongola, the third and second between Dongola and Wadi Halfa, where the river enters Upper Egypt, and the first at Aswan.

Between Wadi Halfa and Cairo, the Valley of the Nile is enclosed by rocky cliffs which rise in places to heights of 900 ft. above the river. The width of the valley varies from less than a mile in the rugged and inhospitable granite and sandstone area south of Aswan, to close on 20 miles between Asyut and Cairo, where the cliffs are composed chiefly of limestone. The arable lands of Upper Egypt occupy the flat floor of the valley between the river and bounding cliffs.

From Aswan to the Delta Barrage, 13 miles north of Cairo, the river flows uninterrupted except for barrages with locks at Isna, Nag' Hamadi and Asyut.

At the Delta Barrage, 146 miles from the sea, the river divides into the Rosetta and Damietta branches. From this point to the sea, there are no further interruptions, except for a barrage at Zifta on the Damietta branch. Both branches are completely closed every year from about February to July inclusive by Sudds (earth banks) built near the mouths.

(b) *Physical Features of Nile Valley.*—The whole Valley of the Nile through Upper Egypt is a country of great richness. A newcomer would be impressed with the following features :—

(a) The absolute flatness of the valley.

(b) The complete absence of dividing lines between the properties of various landowners, except for innumerable irrigation channels. There are no hedges, fences or walls.

(c) The fact that nearly all roads follow the banks of canals and are of mud, without metalling.

(d) The complete absence of woods and forests. Palm groves abound. In nearly every case, these surround some village or hamlet and serve the useful purpose of revealing its presence at a distance.

(c) *Floods and River Levels.*—In the time of the Pharaohs, basin irrigation was in use and the Nile took its natural course. At present, as will be seen from the description of the irrigation system below, the levels are artificially controlled throughout the year.

The river is at its lowest in April and May. Towards the end of the latter month, the effect of the heavy equatorial rains is felt and both the Blue and the White Nile rise steadily together until the middle of July, when the discharge of the Blue Nile increases in volume and rapidity to such an extent that it not only feeds the main Nile, but occasionally pens up the White Nile and even flows up this river for short periods. A reservoir is thus created in the Valley of the White Nile, which empties itself slowly after the middle of September, when the Blue Nile has begun to fall. In this way, the course of the Nile flood is regulated by natural phenomena which maintain high levels in the river in Egypt after the rainy season of Central Africa is over.

The water is generally pale yellow in colour, except for the first two or three weeks of the flood in June, when the water becomes green as a result of vegetable growths (minute algæ) in the water. In August, the silt brought down by the Blue Nile and the Atbara turn the colour to very dark brown (called "red" by the Egyptians) and, during September and October, the river becomes less turbid as the discharge of the Blue Nile lessens and that of the White Nile increases. From October to May, the flow of water gradually lessens. The Delta Barrage is tightly closed during part of this period and the river bed from there to the sea is dry except for seepage water.

The mean difference between low and high levels, known technically as the "range," is 26 ft. at Aswan and 23 ft. at the Delta Barrage, with maxima of 32 and 31½ ft. respectively. The mean velocity in flood is about 3½ miles per hour, while the maximum surface velocity may be about 5½ to 6¼ miles per hour in many reaches.

(d) *Banks*.—The Nile during high flood is considerably above the level of the surrounding country, which is protected by embankments from Aswan to the sea. In Upper Egypt, the difference in level may be about 3 ft., in Middle Egypt 3 to 5 ft., while below Cairo it is 9 to 13 ft., and in places as much as 16 ft. The consequences of breaches in the embankments are thus extremely serious, and breaches in the past have resulted in the fellaheen being drowned in great numbers. The situation to-day is in no way improved, as the amount of reclaimed and inhabited land is on the increase and villages are built on ground level instead of on mounds. During the season of high flood, watchmen are placed every 50 yards along the banks, with repair gangs in readiness at intervals and steamers patrolling the river.

(e) *Navigation.*—Between Wadi Halfa and Aswan, the Nile is navigable throughout the greater part of the year by sailing boats and steamers drawing not more than 6 ft., but at low water navigation is intricate and not devoid of danger, even for vessels of 3 ft. draught.

The sailing distance along the navigable channel from Aswan Dam to the Delta Barrage varies between 600 and 570 miles in low Nile and flood respectively. The width in high flood may be taken to vary between 870 and 1,090 yards, though these are not extreme limits. The fall is about 1 in 12,000.

Navigation in general and routes from the Delta Barrage to the sea are further discussed in Chapter XII—Navigable Waterways.

(f) *Dams and Barrages.*—The first dam is at Sennar, 167 miles south of Khartoum. In order to increase the volume of water available for perennial irrigation, a big dam construction project is on hand at Gebel Aulia, 29 miles North of Khartoum. There is a dam at Aswan and barrages at Nag' Hamadi, Isna, Asyut, the beginning of the Delta, and Zifta on the Damietta branch.

*Aswan.*—The dam is a granite structure 2,187 yards in length, spanning the river at the centre of the first cataract. Its height has been increased by 50 ft. since the dam was first built in 1898–1902, and it now stores about 5,000 million tons of water.

There are five locks in series, each 262 ft. long and 29 ft. wide. The roadway along the top is 26 ft. wide.

*Isna.*—The Isna Barrage is a Regulator, with a lock, across the Nile, designed to hold up 2 metres of water only, which restricts its utility as an aid to irrigation to 3 months of the year (August–October). A project is under consideration for renovating this barrage so that it will hold up  $4\frac{1}{2}$  metres of water. It is about 1,012 yards wide, divided by piers into 120 openings of  $16\frac{1}{2}$  ft. On the west bank is a lock 262 $\frac{1}{2}$  ft. long by 52 $\frac{1}{2}$  ft. wide. The roadway on the top is 19 $\frac{1}{2}$  ft. wide.

*Nag' Hamadi.*—With the completion of this Barrage in 1930 to give a head of water of  $4\frac{1}{2}$  metres, the irrigation of practically all the Upper Egypt basins was guaranteed. This barrage is laid on a thick concrete bed. There are 100 openings, each 19 $\frac{1}{2}$  ft. wide, and the lock at the west end of the barrage is 262 $\frac{1}{2}$  ft. long and 52 $\frac{1}{2}$  ft. wide.

To enable the water to reach the basins on the east bank, a tunnel (Lahaywa Tunnel) has had to be constructed to carry the main feed canal, the Faroukiya, through a spur of the cliffs that come down to the edge of the Nile. The roadway along the top of the barrage is  $19\frac{1}{2}$  ft. wide.

*Asyut.*—The Asyut Barrage has a regulator and a lock across the Nile, north of the town. It is about 984 yards long, being divided by piers into 111 openings of  $16\frac{1}{2}$  ft. each. On the west bank is a lock  $262\frac{1}{2}$  ft. long and  $52\frac{1}{2}$  ft. wide.

This barrage is in process of reconstruction (1936) to give a head of water of  $4\frac{1}{2}$  metres and it is estimated that the work will be completed before the end of 1937. The barrage is laid on a thick concrete bed.

Close to the barrage is the Ibrahimiya Canal head of the same design.

*The Delta Barrage.*—The Delta Barrage was begun under Mohammed Ali in 1835. Owing to insecure foundations, the structure began to shift bodily when the sluice gates of the Rosetta branch were first closed in 1867 and the dam could not be used. In 1885–90 British engineers brought from India succeeded in securing the foundations by cement grouting and brought the barrage into use.

The Barrage is situated 200 yards from the junction of the Rosetta and Damietta branches. The Damietta barrage is 585 yards long, with 41 openings  $16\frac{1}{2}$  ft. wide, and the Rosetta barrage 508½ yards long, with 61 similar openings. A roadway 26 ft. wide between the parapets, able to carry loads up to three tons, crosses the whole structure. This old Barrage, which is capable of holding up 4 metres of water, is of great importance as it provides the whole of the irrigation water for the fertile Delta area. It must therefore be classified as a highly efficient agent in the irrigation system. Structurally, however, it is weak, as the concrete base on which it is laid is very thin. The Egyptian Government has recently (December, 1936) approved a project for reconstructing these barrages, but work on the new project has not yet commenced.

On each branch of the river there is a main lock and a weir lock some distance down stream. The main locks are 175 ft. by  $39\frac{1}{2}$  ft. and the weir locks 210 ft. by  $39\frac{1}{2}$  ft.

(g) *Nile Crossings*.—There are bridges across the Nile at the following points :—

*Above Cairo.*

Aswan	..	..	..	Road Bridge.
Isna	..	..	..	Road Bridge.
Nag' Hammadi	..	..	..	Road and Railway.
Nag' Hammadi Barrage	..	..	..	Road Bridge.
Asyut	..	..	..	Road Bridge.

*At Cairo.*

Abbas Hilmi	..	..	..	Road Bridge.
Qasr el Nil	..	..	..	Road Bridge.
English	..	..	..	Road Bridge.
Boulac	..	..	..	Road Bridge.
Zamalek	..	..	..	Road Bridge.
Imbaba	..	..	..	Railway and Road.

<i>Delta Barrage</i>	..	..	..	Road Bridge.
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*Rosetta Branch.*

Kafr el Zaiyat	..	..	..	Railway and Road.
Disuq	..	..	..	Railway and Road.
Edfina	..	..	..	Railway and Road.

*Damietta Branch.*

Damietta Barrage	..	..	..	Railway (2 miles downstream).
Benha (2)	..	..	..	Railway. Road.
Zifta	..	..	..	Railway and Road.
Zifta	..	..	..	Road.
Talkha-Mansura	..	..	..	Railway and Road.
Damietta	..	..	..	Road.

Details of these bridges will be found under the following headings :—

*Cairo Bridges*.—Chapter IV—Political Geography—  
Towns, Cairo.

*Road Bridges*.—Chapter XI—Roads.

*Railway Bridges*.—Chapter XIII—Railways,  
Tables 2 and 3.

The river is unfordable anywhere above the Delta Barrage, the sandbars shifting so frequently that their position can never be relied on. Between the Barrage and Kafr el Zaiyat, the Rosetta branch is fordable in many places from April to August. The Damietta branch is fordable at intervals between the Barrage and Benha, and

between Zifta and Mansura, from the date of closing the head sluices in February or March until the beginning of August.

#### (4) Irrigation Systems

During the Great War a unit operating in Middle Egypt filled in an irrigation canal in order to afford passage for their guns and transport, not realizing that by so doing they were interfering with the food supply of several thousand fellaheen.

Another brigade was instructed that if it was necessary to fill in a canal they must insert a pipe through the filling so that the water could get through. Shortly after they summoned the irrigation experts in haste, as their camp was flooded out. It was found that they had dammed a canal and put a 1½-in. pipe through the dam. The pipe was so small as to be useless and the camp was upstream of the dam.

The following notes on the irrigation system are included in this Report in the hope that they may prevent similar mistakes in the future.

Irrigation canals and embankments have been in existence since Dynastic times. No attempt was made to control the volume of the flood until the last hundred years. All that was done was to build a series of embankments across the Nile Valley. Each dam kept the water on the land which it was desired to irrigate. When it was thought to have stayed long enough, a hole was made in the dam and the water was let through to the next.

This system is known as "basin" irrigation and of course permits only one crop a year. In modern times more and more of the Nile Valley is being brought under "perennial" irrigation. A portion of the flood water is stored behind the Sennar and Aswan dams and released into the canals in carefully regulated quantities throughout the year. Two crops a year can be grown on land so irrigated.

In 1933 four million acres received perennial irrigation, while 1,300,000 acres were watered on the basin system. When the Gebel Aulia dam, and another at Lake Albert now under discussion, are built, the porportion of land under perennial irrigation will be considerably increased.

The dividing line between the systems is at Asyut, where the Ibrahimiya Canal takes off above the Asyut barrage. (The distinction between a dam and a barrage is that, while a dam is primarily used to *store* water, a

barrage is only intended to raise the river level enough for water to flow into canals.) Everywhere in the Delta and north of Dairut, 37 miles below Asyut, the system is perennial, except for a narrow strip of "basins" on the west bank, at the edge of the desert between Asyut and the Delta Barrage.

These cultivated areas are isolated from the Nile Valley by intervening sandhills. In the last few years a power station has been built at Idfu to supply small electrically driven pumping stations for these basins. By this method the basins can be irrigated whatever the level of the river. It is to be noted that the power station is on the east side of the Nile and the pumps on the west, the power being carried across the river on high tension air line cables in a single span, an arrangement which prejudices the security of the whole of this system of irrigation.

Basin irrigation consists of a series of chains or systems of basins. Each system is complete in itself and consists of several basins, varying from 500 to 35,000 acres in area, divided from each other by cross banks (salibahs), in which are constructed regulating bridges. Each system is supplied by a canal taking off from the river at the south end and, when the irrigation is completed, the water of the system is discharged into the river by means of a regulator at the north end. The land is usually inundated for a period of six or seven weeks. To complete irrigation in years when the flood is poor and low, the different systems are connected so as to form one long system. There is basin irrigation on both sides of the river.

The basin feeder canals are normally opened on August 10th, and in good floods the basins are filled by the middle of September and discharged by the end of November. In bad floods, the dates are advanced by about one month. The date of filling has been delayed of late years owing to the practice of growing cotton in the basins with water from wells. (The isolated basins referred to above begin to fill about September 15th.) The cross banks are carefully watched during the filling of the basins, as well as the numerous regulating works. An accident to any of the banks or works might result in large areas being left unirrigated.

The second problem of irrigation is drainage. Many irrigation canals have drainage canals alongside them. If the land is not properly drained, the sub-soil water level rises and the land becomes unhealthy and unfit for crops.

To deal with this, several comprehensive and up-to-date drainage schemes in the Delta have been carried out and are now functioning. One of the most difficult areas to drain is the low-lying ground close to the coast between the Rosetta and Damietta mouths of the Nile. As the area is malarial, it was decided to build three power stations—Atf, Saru and Bilqas—and transmit electricity at 33,000 volts to fifteen drainage pumping stations. In this way the number of men living in unhealthy districts is reduced to a minimum and the foundation laid for an electrical "grid," which may eventually supply the towns and villages of the area.

## 5. The Delta Area

### (a) *General Description*

The great triangle irrigated from the Rosetta and Damietta branches of the Nile, the angles of which are Cairo, Alexandria and Port Said, forms the Delta, a rich alluvial plain, highly cultivated and intersected by innumerable canals and watercourses.

Bordering on the Mediterranean coastline is a series of shallow salt lakes or lagoons, separated from the sea by sandbanks. Land reclamation projects in this area have been considered, but so far the cost has been found prohibitive. The land is so permeated with salt that it is doubtful if it would ever become fruitful. Fish are extensively netted in these lakes.

The remainder of the Delta is one of the most fertile regions in the world and supports 64 per cent. of the whole population of Egypt. In high flood the whole of the Delta lies below the level of the Nile, which runs between embankments (*see also* Section 3 of this chapter). A thorough system of irrigation has been evolved whereby every strip of land is bordered by a ditch from which the fields can be flooded and invigorated by the rich brown mud brought down by the Nile. So rich is the soil that normally two crops are reaped every year. Cotton is the most important crop. Maize, potatoes and other vegetables are also grown. (For further details of crops *see* Chapter XVI—Resources.)

The important towns of the Delta area are described in Chapter IV—Political Geography. In addition there are innumerable villages and hamlets of mud huts in which the fellaheen live in abject poverty, surrounded by such sheep, goats, cows and poultry as they happen to possess.

(b) *The Coast Line*

The actual coast is flat and sandy, but sand dunes intervene in many places between the shore and the lakes and marshes.

(c) *Lakes and Marshes*

Between Alexandria and Port Said there are a succession of shallow salt lagoons or lakes, which offer a serious natural obstacle to the invader.

*Lake Maryut*, 15 miles long from east to west, and 12 miles broad from north to south, lies to the south of the strip of land on which Alexandria is built.

*Lake Idku*, 6 miles by 6 miles, lies again to the east of the site of Lake Abu Qir, and to the west of the Rosetta mouth of the Nile.

*Lake Brulos*, 45 miles by 12 miles, practically extends from the Rosetta to the Damietta mouths of the Nile, but the eastern end has been reclaimed and is being cultivated.

*Lake Manzala*, 40 miles by 15 miles, lies between the Damietta mouth and Port Said, at its eastern end fringing the embankment of the Suez-Port Said railway.

The above lakes are fed by the canals and drains of the irrigation system.

Lakes Idku, Brulos and Manzala have narrow openings connecting them with the sea. When the canal water, after high Nile, begins to reach the lakes, the flow is from the lakes to the sea; but in the summer months the sea flows into the lakes, causing the openings to get choked with sand.

Lake Maryut is unconnected with the sea and, as the process of evaporation is not sufficient to get rid of the yearly supply from the canals, the water is pumped out again in order to prevent the lake from covering land which has been reclaimed.

The country round these lakes is very marshy and salty.

As these lakes average from 2 to 6½ ft. in depth, they are only navigable by light craft, of which large numbers are engaged in fishing. Water fowl of all sorts abound, especially on Lake Manzala.

*Note.*—To the east of Lake Maryut lies a shallow depression, now completely reclaimed and cultivated, which at one time formed Lake Abu Qir or Ma'adia. This area is below sea-level and could be easily inundated.

*(d) Rivers*

The Rosetta and Damietta branches of the Nile are described in Section 3 of this chapter, The Nile.

*(e) Woods*

There are no woods in the usual sense of the word, but date palms are found all over the Delta, sometimes singly, and also in small plantations. These afford a certain amount of cover from the air.

*(f) Canals and Irrigation Systems and their Effect on Military Movement and the Road System*

The canal system of the Delta is described in Chapter XII—Navigable Waterways. The irrigation system is described in Section 4 of this chapter. No account of the canal system, or map of the same, can, however, describe all the canals and ducts which might need bridging in the event of military operations in the Delta. It can only be emphasized that most careful and continuous reconnaissance would be necessary in any areas in which troops are called upon to operate.

It must be remembered, too, that the main canals feed smaller canals, which in turn feed channels from which the ground is flooded, with the result that during the flood season (August to December) cross-country movement is virtually impossible, and extremely difficult at all times.

Landing grounds could only be guaranteed by interfering with the normal irrigation system, a policy to be avoided except in grave necessity, as liable to have unexpected repercussions.

The main roads of the Delta area are described in Chapter XI—Roads. The flat nature of the country and the irrigation system have resulted in the bulk of the roads being constructed on the raised banks of canals. Such roads are almost entirely built of mud and unable to stand heavy traffic. In wet weather the surface becomes extremely slippery and cars are liable to skid to such an extent that it is no exaggeration to say that during such periods, fortunately of short duration, movement of heavy M.T. vehicles through the Delta provinces becomes impossible. Even after watering, considerable care in driving is necessary. During prolonged operations such roads would require constant attention. The bridges on the main roads are

generally broad and strong, capable of carrying any vehicle up to and including medium tanks, but on the by-roads they are often flimsy affairs.

(g) *Water Supply*.—Generally speaking, ample supplies of good drinking water are available.

In the Delta, sweet water will usually be found at depths of from 10 to 20 ft. This well water is derived from the Nile and larger canals by the percolation of water through their mud beds into the sand and gravel below.

The Nile itself remains the principal source of water supply. Suitable purification measures are necessary before the water is drunk by British troops. The fellaheen of the Delta drink unpurified water from any canal with little ill-effect. Such water, if drunk by Europeans, would be certain to convey disease.

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## CHAPTER VI

**PHYSICAL GEOGRAPHY AND GENERAL NOTES ON  
THE FAIYUM AND THE EASTERN AND WESTERN  
DESERTS****A. Faiyum**

(Reference Map No. 1.)

General Description.

Towns and Population.

Irrigation.

Communications.

Roads. Railways. Telegraphs.

Water.

Resources.

**1. General Description**

About 60 miles S.S.W. of Cairo lies the Faiyum, a lozenge-shaped area, measuring roughly 40 miles from east to west and 35 miles from north to south, and about 1,500 square miles in area.

The north-east corner of the Faiyum is bounded by desert. From the north-east corner in a south-westerly direction to the southern extremity of the lozenge, the Faiyum is divided from the Nile Valley by a strip of desert  $6\frac{1}{2}$  miles wide. South-west of Madinet el Faiyum this is bridged by a strip of cultivation about a mile wide, bordering the Bahr Yusef and El Aguz Canals, the sources of irrigation of the Province. To the west of the Faiyum lies the Libyan Desert. North-west of the Province lies the Birket Qarun, a salt lake about 25 miles from east to west and with a maximum breadth of some 7 miles.

The whole area lies below the level of the Nile Valley, sloping gradually from east to west, the north-western corner being a few feet below sea-level.

Though generally referred to as an oasis, this description of the Faiyum is incorrect in a geological sense, since it is perennially irrigated by the Bahr Yusef. Thanks to this irrigation system, the Faiyum is a rich agricultural area, though scattered through it are low ridges of sand which cannot be irrigated.

Many of the palm groves are enclosed by mud walls about 3 ft. high.

South-west of the Wadi Drain and north of El Minya is a detached rectangular patch of cultivation known as El Gharaq el Sultani.

## 2. Towns and Population

The total population of the Faiyum is about 554,000, of which about 62,000 are Bedouin. In the war of 1914-18 the Bedouin of the Faiyum were friendly disposed towards the Senussi and, as a result, large British forces were retained in the Province. At the present time the population generally are well-behaved and friendly to strangers. The Province is administered by a Mudir.

The principal town is Madinet el Faiyum (population 56,000) about 25 miles west of the Nile. It is the headquarters of the Province and of the irrigation service of the Public Works Department. Further details are included in Chapter IV—Political Geography, in the section dealing with the principal towns of Egypt. Other towns are Sennuris, with a population of 17,500, and Itsa with 3,500.

## 3. Irrigation

The Faiyum is irrigated by the Bahr Yusef and El Aguz Canals, which flow from the Nile south of Beni Suef. The former is navigable to native feluccas. These run to Madinet el Faiyum, from which smaller canals radiate in various directions.

This network of canals and ditches render the movement of troops off the road a matter of considerable difficulty.

The Wadi Drain, which runs some three miles within, and parallel to, the western fringe of the oasis, is an important feature. It flows through a deep wadi bed and, though only of 3 ft. depth, could be filled to a depth of 6 ft. by the irrigation service at short notice. As the banks of the wadi are steep and the approaches to the bridges (of which there are but six) are abrupt, this wadi, when filled, would present a serious obstacle to troops without bridging apparatus, and may be regarded as being, from a military point of view, the western boundary of the Faiyum.

#### 4. Communications

##### (a) Roads

The desert road from Cairo via Mena enters the Province about  $6\frac{1}{2}$  miles north of Sennuris. During the past two years the central portion of this road has been tarmaced. The remainder is metalled, but rough. It is understood that the whole of this road will eventually be tarmaced, after which it should be classed as a first-class road. The desert on either side is suitable for M.T. Another entrance is from the east, near Girza, known as the Darb Girza, which enters the Province near El Roda. The main entrance is from the east near Wasta via El Lahun, which follows the Bahr Yusef. The road is good and runs in to Madinet el Faiyum.

Other roads in the Province are of mud and for the most part very narrow. The surface becomes very treacherous when wet (*see also* Chapter XI—Roads).

There has been some recent road development, especially in the district about the south-east corner of the Birket Qarun.

Bridges on these roads are stronger when running beside agricultural railways and are usually capable of carrying loads up to two tons.

The desert area which surrounds the Province is, for the most part, of hard gravel suitable for M.T.

##### (b) Railways

A single-line railway, 4 ft.  $8\frac{1}{2}$  in. gauge, runs from Wasta to Madinet el Faiyum, thence radiating north to Sennuris and north-west to Abuksah.

Light railways belonging to the Faiyum Light Railway Company radiate from Madinet el Faiyum throughout the Province (*see* Map No. 8—Railways).

These railways are of 2 ft. 6 in. gauge, and in 1931 carried 1,253,630 passengers and 66,083 tons of freight. (For technical and other details *see* Chapter XIII—Railways.)

##### (c) Telegraphs

There are State Telegraph Offices at Madinet el Faiyum, El Roda, Tamiya, El Agamiyin, El Minya and Itsa.

#### 5. Water

Pure water can be obtained in Madinet el Faiyum, where water is laid on to the principal buildings. The water of the canals is unfit for drinking by troops without purification, though it may be used for animals.

## 6. Resources

Bread, meat and forage are obtainable at all principal towns, and forage for mounted troops throughout the Province. Milk, eggs and vegetables can also be bought at reasonable prices.

The canals are plentifully stocked with fish, *e.g.*, mullet and perch, which are much in demand as an article of diet by the inhabitants.

Since the war, a considerable fishing industry has been developed in the Birket Qarun, which is well stocked with sea fish, originally imported from the Mediterranean. Fish is supplied for the Cairo market.

### B. The Western Desert

(Reference Map, No. 1.)

General.

Administration.

Western Desert Province. Southern Desert Province.

Medical.

Physical Features.

Coastline. Coastal Belt. The Plateau. The Escarpment. The Depression. Desert south of the Depression. Desert south of Latitude 29° north.

Coastal Belt.

Villages and General.

The Oases.

Wadi Natrun. Moghara. Qattara. Qara. Siwa. Bahariya. Farafra. Kharga. Dakhla. Oweinat, Dungul. Kurkur.

Climate.

Population.

Water Supply.

Accessibility.

Car Routes in the Western and Southern Deserts.

Landing Grounds.

### 1. General

The country lying between the Mediterranean Sea on the north, the Egypto-Cyrenaican frontier on the west, the Egypt-Sudan border on the south, and the Valley and Delta of the Nile on the east, is known as the Libyan or Western Desert.

The northern portion of the frontier between the Western Desert and Libya has been demarcated by the Italians by the construction of a barbed wire fence which runs roughly parallel to the frontier from the sea southwards for approximately 120 miles. Subsequently the fence turns back through Italian territory to the Italian oasis of Jaghboub.

Full details of the north-western portion of the Western Desert have been published in the "Military Report on the North-Western Desert of Egypt, 1937."

## 2. Administration

For purposes of administration, the Western Desert is divided into—

(a) *The Western Desert Province*, which includes the coastline and the oases north of parallel 29° of latitude, excluding the Faiyum, which is a province of Upper Egypt and is dealt with in Section A of this chapter. The Governor's headquarters are at Mersa Matruh on the coast, 178 miles west of Alexandria.

The province is divided into four districts, each under a district Officer. These have their headquarters at Amriya, Mersa Matruh, Sollum, Siwa.

Thirteen Administrative Officers, called Inspectors or Mamurs, are employed under the District Officers. These Mamurs in turn deal with the Omdas or Sheikhs who are at the head of each sub-tribe.

(b) *The Southern Desert Province*, which includes all Egyptian territory to the west of the Nile cultivated area and south of the 29° parallel of latitude. The Governor is an Egyptian officer of the rank of Miralai, with headquarters at Kharga. The province is organized on similar lines to the Western Desert Province.

Further details of the administration of the Desert Provinces will be found in Chapter XVIII, Section A—Frontiers Administration, and Chapter VII—Sinai.

(c) *Medical*.—There are Government hospitals with doctors at Amriya, Daba'a, Mersa Matruh, Sidi Barrani, Sollum, Siwa, Bahariya, Kharga and Dakhla.

### 3. Physical Features

#### (a) *The Coastline*

The coastline of the Western Desert, extending from Alexandria to the Gulf of Salum, may be described as a most inhospitable shore, in most parts exposed to every wind except the south, and studded with dangerous reefs. Even in a moderate breeze, landing is attended with risk. The shore alternates between sandy stretches and low sea-beaten cliffs, except in the Gulf of Salum, where the cliffs rise to some hundred feet.

There are two small harbours on this shore at Mersa Matruh and Salum. Anchorage can be made under favourable conditions in the Gulf of Kanayis and off Alem el Negm (Sidi Barrani) and Ras Alem Rum. Stores have been landed at Sidi Barrani by ship's boat from vessels lying a mile off-shore, but weather conditions must be favourable, and ships may have to wait some days for such conditions.

#### (b) *The Coastal Belt*

This is a strip of low-lying country between the coast and the plateau. At its eastern end the intersection between it and the plateau is ill-defined, and the plateau may be said to merge with the slopes of the coastal belt. Between Mersa Matruh and Sidi Barrani, the northern limit of the plateau is about 25 miles inland. The ascent from the coast in this part is easy and gradual and consists of a series of steps until the main plateau is reached. Further west the coastal belt rapidly narrows towards Salum, and the edge of the plateau becomes a pronounced and almost precipitous escarpment, and for the last 35 miles from a point due south of Buqbuq to Salum can only be negotiated by cars at the Naqb Halfaya Pass and Salum itself.

The coastal belt is semi-fertile, with good winter and spring grazing after rain, and some wheat and barley is grown, especially at the eastern end when the rainfall justifies sowing. The rainfall is, however, uncertain.

#### (c) *The Plateau*

The plateau consists of a great tract of limestone desert stretching from the Nile Valley in the east through Cyrenaica to the Gulf of Sidra in the west.

Within Egyptian territory it is waterless except for occasional rain-catching cisterns of ancient construction, and is uninhabited except to a very small extent on its northern edge adjacent to the coastal belt.

The average altitude is about 500 ft., but it is several hundred feet higher between Moghara and Qattara. It varies in width from about 30 miles south of Alamein to about 170 miles south of Salum.

The southern boundary of the plateau is formed by a steep escarpment, which is described in the next section.

The northern portion of the plateau, a belt 15 to 20 miles wide, has a fair amount of grazing, with depressions filled with loam. The surface generally is covered with rough stones—severe on tyres and mechanism—and is not good country for mechanical vehicles. This semi-desert belt is roughly defined on the south by Bir Sheferzan, Bir Khamsa, Bir Quatrani, Bir Istabl and Bir Khalda—east to west.

Further south the vegetation disappears and the surface of the desert for car traffic improves as the rough stone gives place to finer gravel. Occasional stretches of soft yielding country are met with. Depressions are filled with a hard pan of water-deposited material which sets like cement and presents an excellent surface to drive over. Broadly speaking, the whole of the plateau is good country for all classes of military M.T. and movement on a wide front is practicable. When tactical conditions permit, there are advantages in adhering to the masrabs, or caravan routes, which are harder and less extravagant in petrol consumption than the unbeaten desert. Except on the beaten tracks, car travelling on the plateau resembles navigation at sea, as the monotony of the surface is almost unbroken by conspicuous features and in many places cars can be driven in a straight line for as much as 100 miles without encountering a serious obstacle.

#### *(d) The Escarpment*

The southern boundary of the plateau is an escarpment, which is a striking feature of the country. It begins as a gentle rise at the north-west end of the Wadi Natrun, but soon becomes more conspicuous. It runs almost due west in a very irregular line, just north of Moghara to Qattara and then curves to the Siwa Oasis.

The escarpment is highest between Moghara and Qattara, where some of the headlands rise 900 ft. above the level

of the desert to the south. Between Moghara and Siwa, the escarpment cannot be negotiated by car except at a few passes where the wadis have cut their way through.

Cars on the plateau can in many places be driven to the very edge of the cliffs and observation obtained over the oases.

(e) *The Depression*

South of the escarpment, from Moghara westwards, lies a long depression which contains the oases of Moghara, Qattara, Qara and Siwa. The depression immediately south of the escarpment is at or below sea-level. Thence the ground rises very gradually to the south.

Along the lowest parts of the depression occur great stretches of "sabakha" or salt bog. The sabakha has the appearance of petrified waves of brown earth with a white crust and depending on the moisture in the soil is its capacity to support heavy traffic. Light cars carrying up to 1,200 lb. can traverse the sabakha in all directions except in the northern strip between Moghara and Qattara where there are some wet patches.

(f) *The Desert South of the Depression*

About 40 miles east of Qara Oasis, on the edge of the sabakha, it will be noticed from the map that a low escarpment starts and runs south-east. This scarp marks the commencement of good going over smooth gravelly desert in an easterly direction right away to the Nile valley.

The ground gradually rises to the south-east, until reaching the escarpment overlooking the Faiyum and Bahariya Oases.

The only obstacles to movement are the lines of sand dunes which are a very definite feature of this portion of the desert. They consist of long, narrow ridges of the finest white sand, quite impassable to any except Infantry. Sometimes a line of dunes may extend with no gap for 50 miles. Although in a high wind a plume of sand is continually being blown from the saw-like edge of the summit of the dunes, this is replaced by sand collecting on the windward side and the position of the dunes remains roughly constant. Recent observations show that the dunes move along their major axis in a south-easterly direction at a rate of 10 metres per year.

The dunes, which are sometimes as much as 300 ft. above the level of the surrounding plain, lie south of the depression and they nearly all run north-north-west and south-south-east.

As one moves west from Mena, the Partridge Dunes (Ghard el Kattaniya) are the first encountered, about 12 miles west of Gebel Ruzza. They stretch for 20 miles with no gap through them. The routes to Moghara and Bahariya pass the north and south edges respectively of these dunes. Great Dunes (Ghard el Rammak) about 70 miles west of Partridge Dunes, form a more serious obstacle. Starting a few miles south-east of Moghara, they stretch for 70 miles in a south-south-east direction, broken by only one narrow gap.

As a rule the going round the dunes, and in the intervals between parallel lines of dunes, is firm gravel.

The dunes form conspicuous landmarks and fine views can be obtained after climbing to their summits.

(g) *The Desert South of Latitude 29° North*

South of the area described above, except for the oases of Bahariya, Farafra, Kharga and Dakhla, the country is unmapped and almost unexplored. Only specially equipped desert expeditions have succeeded in penetrating this area other than by the routes to the oases (see para. 5). It is therefore impossible to give more than a sketchy description of the country.

The area south of Bahariya to Farafra Oasis is chiefly limestone and, where this comes to the surface, the going is bad for all classes of motor vehicles.

There is a sandbelt running roughly north and south between the east end of Bahariya and Kharga Oases. This is impassable east of Bahariya and for some distance south. Towards Kharga there are no ways through.

All the country south of Kharga and Dakhla is Nubian sandstone and not very hilly. Apart from sand dunes in small areas and fairly low escarpments, the going is good for motor vehicles. The area east of longitude 31° is somewhat mountainous and a steep escarpment runs north and south 35 miles west of the Nile from Manqabad (Asyut) to Wadi Halfa.

The escarpment turns west in latitude 23° 25' and joins the scarp forming the eastern boundary of Kharga Oasis.

The area west of Farafra-Dakhla and west of the line Dakhla-Oweinat is a sand sea, which prevents even camels from leaving the caravan routes.

#### 4. The Coastal Belt.

(Villages and General.)

As already stated, the Coastal Belt is semi-fertile and, as might be expected, the majority of the population of the Western Desert inhabit this belt, which contains a number of small villages and hamlets, and two places of some importance, Mersa Matruh and Salum.

The Bedouin of the coast have flocks of camels, sheep and goats. A certain amount of wheat and barley is grown.

For the effect on the population of the artificial barbed wire frontier constructed by the Italians, *see* para. 7.

The following are notes on the chief places of importance on the coast working from east to west :—

*Bahig*.—On the Alexandria-Mersa Matruh Railway Junction of the coast road and desert track from Cairo-Mersa Matruh via the Wadi Natrun. One section Camel Corps of the Frontiers Administration stationed here.

*Hammam*.—On the railway and coast road to Mersa Matruh. An important market.

*Alamein*.—Junction of the railway and caravan route to Siwa via Moghara.

*Daba'a*.—On the railway. Market, barracks and good water supply.

*Fuqa*.—On the coastal road, 55 miles from Mersa Matruh. Terminus of the coastal railway prior to the extension of the railway to Mersa Matruh in 1936.

*Mersa Matruh*.—Headquarters of the Governor of the Western Desert Province and a summer health resort. A well-laid out desert township with broad streets and several houses habitable by Europeans. Principle buildings are the Government offices, hospital, two hotels and a wireless station. A good supply of water (*see* Appendix 3). Terminus of railway from Alexandria. Port for vessels up to 2,000 tons.

*Salum*.—An important frontier post, which is the normal station of one battalion and one Light Battery of the Egyptian Army, as well as one Light Car Patrol of the Frontiers Administration.

The village is situated at the bottom of the escarpment (*see* para. 2 (b)), which is 500 feet high and runs right up to the sea at this point.

The barracks which are new, clean and well built are on the top of the escarpment, and a well-graded macadam road connects them with the village below.

There is an adequate water supply for the local population, but is only fit for consumption by natives.

Water for the garrison, Government officials and any Europeans depends on a distillery plant situated at the base of the outer breakwater, which fills a large storage tank near by. The water from this tank is then pumped up the hill by means of two pipe lines into two small storage tanks at the barracks. The water supply from the distillery plant is not adequate even for the normal garrison, and it has to be supplemented by water carried by patrol vessel from Alexandria, which calls about once a week. The destruction of either the distillery plant or the pump which pushes the water up the hill would have most serious results.

Salum is connected with Sidi Barrani and Mersa Matruh by a rough road which is practical for all types of M.T. in fair weather. There is also a good desert track to Siwa.

Between the barracks and the Italian Frontier  $3\frac{1}{2}$  miles to the west, there is a good landing ground.

Seaplanes can use the harbour.

*N.B.*—For further details of the above towns and villages, and the harbour facilities at Mersa Matruh and Salum, see "Military Report on the North-Western Desert of Egypt."

## 5. The Oases

An oasis is a depression in the desert, in some part or parts of which water is procurable. The same general description applies to all the oases of the Western Desert. The bottom of the oases consist of salt bogs (sabakha), frequently with shallow lakes, below sea level; bordering the sabakha are soft sandy or gravel slopes. The edges of the sabakha have considerable vegetation, rough grasses, camel thorn and sometimes tamarisks, prickly acacias or date palms.

The water supply of the oases, except at some of the wells of Siwa, Kharga, Bahariya, Farafra and Dakhla, is generally brackish and unfit for drinking by Europeans.

Mosquitoes and camel flies are very prevalent in the oases, the latter especially in the Bahariya, Farafra, Kharga and Dakhla oases.

The oases in the Western Desert are—

(a) *The Wadi Natrun*

A depression containing a chain of seven salt lakes. Its south-east end lies 50 miles north-west of Cairo and it continues for about 30 miles in a north-westerly direction.

The plateau along the eastern side of the wadi is excellent going, as is the Wadi Farigh on the western side, but the bottom of the wadi is soft sand.

A light railway runs from Khatatba on the edge of the delta to the factory of the Egyptian Salt and Soda Co., at Bir Hooker, a distance of 30 miles, and continues to the quarries on the west side of the wadi, but there is no road or track across the soft sand of the Wadi Natrun, and communication with the Western Desert would be greatly improved by the construction of such a road, linking up with the new Cairo-Alexandria desert road.

The works of the Salt and Soda Company at Bir Hooker includes pumps, workshops and dwellings of staff and employees. There is also a rest house, belonging to the company and a Frontiers Administration Rest House 1 mile to the north-west.

The water supply at Bir Hooker and at the adjacent Coptic monasteries of Makaryus, Amba Bishoi and Suriani is limited, but of good quality.

The Arabs of the Wadi Natrun are of the Gawabice tribe. They are nomadic and own the grazing rights. In a bad season they move down to the Faiyum to graze.

There are 350 to 400 fellahin employed by the soda factory at Bir Hooker, which has mineral rights only.

The monasteries, to which previous reference has been made, are decaying fortress buildings, each containing about 25 monks who lead a miserable existence.

(b) *Moghara Oasis*

Lies about 35 miles south of Alamein, a station on the coastal railway. It consists of a depression about 4 miles square, which contains a salt lake and a considerable amount of vegetation.

Access from the south is hampered by sand dunes which can, however, be crossed by modern cars. The Masrab Mehshas, an old caravan route between Siwa

and the Wadi Natrun, passes through from east to west. A track to Alamein ascends the escarpment by a wadi with an easy gradient just west of Minqar el Ralat, about 10 miles north-west of Moghara.

There are various springs near the lake with poor quality water, and there is considerable camel grazing in the vicinity, but there are no permanent inhabitants.

(c) *Qattara Oasis*

This oasis is 100 miles west of Moghara and 80 miles south of Mersa Matruh, close under the escarpment.

It contains springs of varying quality which can be drunk in case of necessity, in a small grove of palms. Owing to the escarpment and the sabakha; it is difficult of access by car, but can be approached from the east and south if cars keep below the scarp over very rough going. A good track runs from Mersa Matruh to the escarpment just north-east of Qattara.

(d) *Qara*

Is a small oasis near the escarpment 65 miles north-east of Siwa and 130 miles south, south-west of Mersa Matruh.

It is a depression about 6 miles from north to south by 4 miles broad, and contains a number of irrigated gardens and palm groves which are hardly sufficient to maintain some 40 inhabitants of the small village which is situated on a rocky knoll. A telegraph line from Mersa Matruh to Siwa passes through Qara, and access to the oasis for cars from both Mersa Matruh and Siwa is fairly easy. A deep sanya close to the village wall supplies the inhabitants with brackish water. The best supply is from a dropping well about 500 yards west of the village under a low cliff. Even this is not good, and the supply from other wells used for irrigation is definitely unfit for drinking.

(e) *Siwa*

Lies about 160 miles south of Sollum and 335 miles west of the River Nile.

Siwa itself and the neighbouring oases east and west of it form one group and contain a considerable area of cultivated land, with date palms, orchards, fields of wheat, barley and berseem, and gardens. Siwa is the destination of a large number of caravan routes.

There are many wells of good water scattered throughout the oasis and an artesian well at Siwa village.

Access to Siwa for cars is fairly easy from the north, north-west and north-east. The best pass through the escarpment is Migahhiz Pass, 6 miles north of Siwa; the routes from Sollum and Mersa Matruh converge and use this pass.

Sand dunes border the south side of the oasis and the going is impassable, except to light cars with air wheels. Small rough hills and undulations break the level of the valley in which there are several salt lakes, the largest of which lies immediately to the west of Siwa. These lakes are in many respects similar to those of the Wadi Natrun. In summer they are nearly dry owing to evaporation, the exposed surface then hardens into rough and broken steps with a soft bottom, difficult to cross. In winter the salt lands become marshes, on which it is impossible to travel. Causeways have been constructed in places.

The town of Siwa rises on the west side some 120 ft. and on the east side 75 ft. above the plain. The houses (consisting of salt and mud blocks) are built one above the other, and the whole forms a solid mass similar to an ant-heap. Streets, except for the main through routes, do not exist.

There are a few houses in gardens outside the town, including Egyptian Government buildings such as the prison, law court, hospital with native doctor, and the residence of the Mamur, and a mosque of modern construction. There is also a post office and telegraph line to Mersa Matruh.

One Light Car Patrol of the F.D.A. are stationed here.

About  $1\frac{1}{2}$  miles east of Siwa is the village of Aghurmi, of similar construction to the town of Siwa.

The inhabitants of the Siwa Oasis number about 4,000 and are of a distinct race of Berber origin. They have a language of their own, but understand Arabic. The Siwans are not nomads and differ in customs and appearance from the Arabs. They are lighter, wiry and excellent workmen. A few rich Sheikhs own all the land, the remainder of the population being labourers.

Donkeys are the chief domestic animals. A few of the richer Sheikhs own horses. There are a few head of cattle and fowls and pigeons are common.

The air of Siwa is oppressive, no doubt owing to exhalation from the lakes and marshes. The prevailing wind is from the north, but full benefit is not felt owing to the height of the northern plateau.

The summer is very hot, and the winter damp and misty with cold nights, though there is very little actual rain.

(f) *Bahariya Oasis*

Bahariya Oasis, 59 miles long and 28 miles wide, is situated about 100 miles south-west of the Faiyum and consists of a large depression bounded by an escarpment.

The water supply comes from natural springs and shallow wells, the supply being practically unlimited. The water, though drinkable, is slightly tainted and frequently warm with bubbles of carbon dioxide rising in it.

Many kinds of fruit are grown, but especially oranges and dates. The latter form the staple crop, a portion of which is exported. Recently (1935) a company has been formed to transport such produce to Cairo. A little barley is also cultivated. About 1,000 acres of land are under cultivation with about 196,000 date palms.

Domestic animals are very scarce. Donkeys are chiefly used for transport. There are a few flocks of sheep and a few camels, the shortage of the latter being due to the presence of the tabanya fly, whose bite is fatal to them.

The inhabitants number about 6,000 and mainly live in the four villages of Kasr, Bawiti, Zabe and Mendisha. They have distinctive characteristics of their own and are neither Bedouins or Fellaheen.

There is a resident Mamur and a native doctor, small hospital and wireless station, all at Bawiti.

(g) *Farafra Oasis*

Farafra, lying to the south-west of Bahariya, is an oasis of considerable extent, but of little importance and possesses only one village of any size, Kasr Farafra, about 190 miles west of Asyut.

About 40 miles to the north-west lies the Ain Dalla Oasis, where there is little ground suitable for cultivation, though there is one spring which supplies excellent water and is very useful as a watering place on the road to Siwa Oasis.

In the entire Farafra depression, there are some 20 springs, most of which are situated near the village under the western escarpment. The water supply is not unlimited and is of fair drinking quality. The total area under cultivation, exclusive of palm groves, etc., does not exceed a few acres in any one year and barely suffices to supply the wants of the inhabitants.

The population according to the 1927 census, was about 500.

The climate is the most healthy of all the oases. The oasis is administered by the Mamur of Bahariya, but there is a resident Government Sheikh.

(h) *Kharga Oasis*

Kharga Oasis, which is in the form of a valley, is over 1,800 square miles in extent. It lies about 90 miles from the Nile Valley and extends roughly between the parallels 26° and 24° north latitude, and forms the eastern portion of an immense natural excavation, the western portion of which is the more fertile oasis of Dakhla.

The oasis contains four principal villages—Kharga, Genah, Bulaq and Baris—and five hamlets.

There is fairly large date crop, and other fruits, wheat, barley and berseem are also grown close to the villages. Palms, tarmarisk bushes, bulrushes and coarse grasses grow freely. Acacias generally mark the position of wells. Duck and sand grouse can be shot.

Donkeys are used for transport, with a few camels. The shortage of the latter, as in the case of the other oases, is due to the prevalence of the tabanya fly.

The water supply is derived from numerous wells. There are also several well-boring machines in the oasis. At Kharga, the water is unlimited and of excellent quality. There is water of fair quality at Baris. Unlimited water can be obtained at Bulaq by digging.

The oasis is administered by the Governor of the Southern Desert Province, a senior native officer of the rank of Miralai. He is assisted by two junior officers. All Government offices are at the town of Kharga, where there is an excellent Government Rest House, as well as a station, post office, native doctor and hospital. The town is well kept and clean.

Of the total population of the Oasis, 8,500 approximately, half reside in Kharga village. Baris is the second village of importance, three policemen are stationed there.

A light railway runs to Kharga from the Nile Oasis Junction, close to Nag 'Hamadi. There are now new engines on this line, and the time taken is six hours, trains running twice a week. (For further details, see Chapter XIII Railways.)

There is an aeroplane landing ground at Kharga.

(i) *Dakhla Oasis*

Dakhla Oasis lies about 75 miles west of Kharga village and is the most important of the four oases lying in the eastern part of the Western Desert. It is about 36 miles long from east to west, the cultivated part being 4 to 5 miles broad from north to south and is confined on the north by a precipitous escarpment.

The oasis, which is very fertile, contains 12 villages and many Ezbas. The cultivated strip is divided into two areas separated by a strip of barren desert six miles in width. The western division is the more important, including Kasr Dakhla, Budkhulu, Mushia, Rashda, Gedida, Kalamun, Hindaw, Masara and Mut (capital). The eastern division, which is only half the size of the other, has only two large villages, Belat and Tenida.

The population according to the census of 1927 was about 17,000.

Water is good, unlimited and drawn from wells. A very large date crop is grown, considerably in excess of local requirements. Oranges and lemons abound and sufficient cereals are grown for the needs of the local population.

Donkeys are used for local transport, and there are few camels. Sand grouse and gazelle are to be found.

There is a Mamur with staff and police resident at Mut. There is also a native doctor, small hospital and a wireless station. There are two good rest houses, a new police barracks, Government offices and, in course of construction, a two-storied building which is to be the Mohammedan Law building. There is an electric light supply to all these buildings.

There is also a post office.

The roads throughout the oasis are good.

At Rashida is another rest house and several other buildings.

The best oranges come from this village.

All the buildings are very well kept and clean.

(j) *Oweinat*

A small uninhabited oasis on the Sudan-Egypt-Italian border is of importance only as being the subject of discussion between the British and Italian Government in 1934, when one well was occupied by British and the other by Italian

troops. There is also no water actually within the Egyptian boundary, though there is a limited supply of indifferent water at Kharkur Murr just over the Sudan border.

*Note.*—This can hardly be called an oasis as there is no vegetation of any sort.

Oweinat consists of a huge granite massif some 1,895 metres high rising out of the desert floor.

To the north, is Gebel Arkinu and to the south, Gebel Kissu.

Oweinat can usually be seen some 50 or 70 miles away.

(k) *Dungul*

An oasis of no importance south of Kharga, from which it can be approached. There is water here.

(l) *Kurkur*

South-east of Kharga. Approach can be made to within 2 miles of it from the Nile Valley. There is water here.

## 6. Climate

The climate of the Libyan Desert is similar to that of the rest of Egypt (*see* Chapter IX—Climate). Along the semi-fertile coastal strip, there is an annual rainfall of about six inches during the winter months. This winter rain gives the Arabs good winter and spring grazing for their flocks. The coastal belt also grows good corn crops.

As one moves inland, the rainfall rapidly diminishes, and 100 miles from the coast it is negligible. Occasionally, however, there is a heavy thunderstorm or cloudburst. These, though rare, have a noticeable eroding effect on the bare desert surface.

Extremes of temperature are greater in the Western Desert than in the Nile Valley. In the summer, the temperature in the oases reaches 120° F. In winter the temperature may fall several degrees below freezing point at night at intervals during December, January and February.

The prevailing wind is north, but during the months of March, April and May, a Khamsin, a hot wind from the south, blows at intervals. When strong, this wind causes bad sandstorms.

## 7. Population

The Bedouin, the inhabitants of the Western Desert, are nomadic Arabs, and are quite different to the town-dwelling Arabs of the Nile Valley or the Egyptian fellaheen. The Bedouin probably originally immigrated, in most cases, from Arabia and Syria. They all profess Islam, but the chief points of the Mohammedan religion are less strictly adhered to than amongst the fellaheen.

The total population of the whole Western Desert and Southern Province is now about 73,000. No accurate record, however, is available, owing to the dislike of the tribes to being numbered. The Arab connects a census with conscription or some other objectionable reason.

A large portion of the total population inhabit the coastal littoral. The majority of these belong to the Aulad Ali tribe, which has to a certain extent retained the fiery blood, independence, courage and restlessness of the desert tribes which achieved such exploits in the days of the Prophet.

In para 1 of this Chapter, reference has been made to the barbed wire fence constructed by the Italians to mark the northern portion of the Western Frontier. This has had a curious economic effect on the life of the coastal Bedouin. Prior to its construction, they moved freely from Egyptian to Italian territory and vice versa to graze their flocks wherever the uncertain rainfall was the better. At the time of its construction, many of these Nomads were disposed to take refuge on the Egyptian side of the frontier. Subsequently, during periods of drought when return became an economic necessity, the artificial boundary, which can only be crossed at four points and international rules and regulations appearing an insuperable difficulty to these simple folk, forced them to remain in Egyptian territory on the verge of starvation.

It is difficult for the Western Desert authorities to organize productive work to relieve such distress. As a result, the policy adopted by the Italian authorities in 1934 and 1935 of offering inducements to their erstwhile subjects to return to Italian territory has received the encouragement of the Frontiers Administration.

Special characteristics of the inhabitants of the various oases have been described in para. 5, under the heading of the oasis in question.

Speaking generally, the inhabitants of the Western Desert, especially those domiciled in the oases, are reasonably law-abiding and parties of Europeans can traverse

the coastal tracks and visit the oases in complete security. There is a feeling of hostility towards Italy amongst the Bedouin whose relatives across the Libyan border have suffered under the Italian regime.

The religious fanaticism, which at one time characterised the Senussi Confraternity of the Siwa Oasis, has disappeared, as modern communications and transport has brought the Western Desert into closer touch with authority and the Egypt of the Nile Valley and Delta.

### 8. Water Supply

After leaving the coastal belt, except for the springs in the oases, the country is waterless. Rain-catching underground cisterns, some of which are of great age and considerable size, have been constructed at intervals on the caravan routes.

As a general rule, these cisterns increase in size the further inland one moves, to try and compensate for the diminishing rainfall. The cisterns are filled as the result of a very occasional cloudburst or thunderstorm. The Frontiers Administration are at present cleaning out the old birs and constructing some new ones.

A general account of the water supplies in the various oases has been given in para. 5. A list of water points in the Western Desert is contained in Appendix 3.

### 9. Accessibility

#### (a) *North of Cairo*

Access from the Nile Valley to the Western Desert is very bad at present, but could be easily improved. Access can be made at Giza Pyramids, but north of Giza Pyramids there is no access to the desert suitable for cars until Birqash is reached, and even here soft sand on the edge of the cultivation stops cars not specially equipped.

At Khatatba, a light railway (*see* Chapter XIII Railways) runs to the Salt and Soda Factory at Bir Hooker in the Wadi Natrun, but there is at present no access to the desert for cars.

North of Khatatba, there is no access to the desert until Alexandria is reached, whence a railway runs to Fuqa and Mersa Matruh. A road runs along the coastal belt. (*See* para. 10, Route 2.)

*(b) South of Cairo*

Routes into the desert south of Cairo are as follows :—

From Beni Suef locality, there is a route 1 mile north-west of El Lahun. This is a good hard track suitable for all vehicles. The only obstacle on this exit is the El Wasta-Faiyum railway, but crossings exist 400 yards west of El Rus station, and at Kilo posts 10, 9 and 8.

From El Minya locality, there is a route 1 mile west of Nazlet el Ibeid, but it is not passable for A.F.V.s, due to sand dunes on the desert edge. There are two routes near Asyut to the desert, (a) at Gadham and (b) 1 mile south of Manqabad station. Both are passable to all vehicles, except tanks, in the case of (a). There is one other route 1,000 yards west of Istabl Antar Slaughterhouse, passable for all vehicles. From Sohag it would be possible to get to the desert by three routes, firstly 3 miles west-south-west of Sohag, secondly at Aulad Salama and thirdly at El Araba, Sohag. In the cases of routes to the desert from Minya and Sohag areas, from 5 to 10 miles into the desert going is good. Then an escarpment is reached, up which routes have only been reconnoitred by air.

There is also the railway from the vicinity of Nag Hamadi to Kharga (*see* Para. 5 (h)), and a road leading into the desert about 3 miles south of Idfu.

#### 10. Car Routes in the Western and Southern Deserts (*see* Map No. 1)

Generally speaking, the chief car routes follow the old camel tracks. These old caravan routes are useful landmarks and are a great aid in finding one's way.

With cars suitably equipped and fitted with balloon or large section tyres, movement can be carried out almost anywhere.

The only obstacles are the escarpment (para. 3 (d)), the softer patches of "sabakha," and the lines of sand dunes which are numerous in the area between Gebel Ruzza and the ridge which lies south of the escarpment about 50 miles south-east of Qattara. These sand dunes, of the finest white sand, form conspicuous landmarks. Their position is constant and movement round them is generally easy.

Cars moving in the desert should always have speedometers whose error is known. The speedometer is the most useful aid in finding one's way ; without it the tendency is always to over-estimate the distance travelled.

the road by driving round them over the desert, but any such diversion will in turn become impassable after continual use.

The track is passable for all kinds of M.T. in dry weather, but would be liable to break up under continuous use.

Though the metalled road from Fuqa to Mersa Matruh is normally suitable for all classes of M.T., the risk of a wash-out during wet weather must not be overlooked, and the newly constructed road was in fact breached in two places during a storm which took place in October, 1936.

The country on both sides is open and it is possible to leave the route in most places. Camel thorn, small hummocks and in some places rocky outcrops do not make cross-country driving easy and are apt to cause damage to vehicles unless care is used.

For the most part the road is not visible from the sea and runs on an average 2 miles inland, between the sea and the railway. A telegraph line runs parallel to the latter, but there is no such line along the road. The railway runs on an average 1 mile south of the road and is visible almost throughout.

Any large movement along the route is easily visible from long distances on account of the dust. The escarpment, which runs roughly parallel to the coast to the south of the railway, gives observation over the route throughout almost the whole length.

Nowhere along the route is there any cover from air observation.

Water can usually be obtained from the shallow wells near the sea-shore, and the most abundant supplies are shown on the maps supplied by the Surveys of Egypt.

Between Mersa Matruh and Sidi Barrani, the road is being metalled, and in October, 1936, had been metalled for a distance of 53 kilometres and 11 kilometres have been asphalted. It is estimated that the whole road to Sidi Barrani will be complete by November, 1937.

The country on either side is open, and it is therefore possible to leave the road for purposes of concealment at almost any point between Mersa Matruh and Sollum. Owing to the fact that the surrounding country is very largely scrub with numerous small hillocks, it is only possible for M.T. to move off the road comparatively slowly.

A telegraph and telephone route runs parallel to the route throughout its length. Three conductors as far as Sidi Barrani, from whence one wire only is continued to Sollum.

At intervals along the road on either side are many old cisterns, most of which have huts or other buildings in their vicinity. Only those which make prominent landmarks or which are close to the road are mentioned in this report.

The route is passable for all kinds of M.T., but would quickly break up under continuous traffic after passing Sidi Barrani.

There are numerous tracks leading north from the road to the sea, and the two marked on the map as leading to Zawyet Unjeila, about 40 miles from Mersa Matruh, are not easy to identify.

Near Sidi Barrani, the road is visible from the sea. Dust clouds could probably be seen from the sea throughout most of its length. 28 miles from Sollum the road divides into two alternative routes, (a) a coast road over a series of salt pans forming an excellent driving surface in dry weather, but unsuitable for traffic when wet, and (b) a very rough and rocky inland route. These two tracks join up again on the coast 3 miles from Sollum.

*Route No. 3.—Sollum—Siwa (188 miles).*

To ascend the escarpment inland from Sollum, there are two passes suitable. Fort Pass, a new winding tarmac road of excellent grading passing by the new barracks, and Hulfaya Pass, which is considerably rougher. These two tracks converge in the neighbourhood of Bir Wa'er and thence lead in a south-westerly direction to Bir Sceferzen. Bir Sceferzen is easily distinguishable by a large artificial mound. The distance from Sollum to Bir Sceferzen is 29 miles.

Turn left at Bir Sceferzen and follow track running south. This track is clearly marked all the way to Siwa. The surface is hard and mostly rough, crossing open rolling desert. There is a rest house 99 miles from Siwa. Water can often be obtained from a cistern adjacent to the rest house. The track passes through the Migahhiz Pass into Siwa. The pass provides no difficulties for heavy vehicles.

*Route No. 4.—Siwa-Mersa Matruh (193 miles).*

The track Siwa-Mersa Matruh is in excellent condition for the first 125 miles. The last 70, with the exception of the last 8 miles into Mersa Matruh, are very rough and stony.

Rain could not have much effect on the route Sollum-Siwa-Mersa Matruh.

*Route No. 5.—Alamein-Moghara or Magrah (52 miles).*

From the Mersa Matruh road at Alamein, turn left and go towards the railway station over the level crossing. From the station, the road to Moghara starts. The track is well defined, but with a very flinty surface necessitating slow speed. After 16 miles, the track descends into an unnamed wadi, the going is quite good and the track well-defined to Gebel Hameimat. After here, proceed for 1 mile south and then go on a bearing of 24 degrees approximately to top of big wadi down escarpment. The going is fair and the distance from Gebel-Hameimat to top of escarpment is 5 miles.

Go down the escarpment and continue along wadi for 4 miles until well clear of escarpment. Then bear south-east for Hatiyet el Moghara. Going very good as far as Minqar el Rehat. The distance from escarpment to Hatiyet el Moghara is 25 miles. The going is very soft near all isolated features and they should be passed at a reasonable distance. Around Moghara Oasis the going is very bad with drift sand, and to south-west of the lake there is a line of low sand dunes, easily crossed by modern cars.

*Route No. 6.—Moghara or Magrah-Wadi Natrun-Cairo.*

Proceed on track from Moghara marked by cairns to Black Paps. Proceed on bearing to High Hill to the Wadi Natrun. The map is difficult to read as there are many similar features. However, if bearings are relied on, the route is easily found as the going is good until opposite Bir Hooker. The distance is 53 miles. Continue in an easterly direction until the Alexandria-Cairo desert road is met and continue on this to Mena.

*Route No. 7.—Cairo-Siwa (via Qara-South end of Great Dunes) (420 miles).*

Route to be followed is Giza Pyramids-Partridge Dunes-Great Dunes-Owstons Dump-Conspicuous Knoll-Sabakha-Qara-Siwa. The going is good from Giza Pyramids to the

south end of Partridge Dunes (Ghard el Kattaniya) west-south-west over hard sand and gravel, and thence on the same general bearing to the south end of the Great Dunes (Ghard el Rammak). At this point, soft sand is encountered. The route continues to the south end of William's Dunes (Ghard Misa'ada) to turn north-west following the west side of the Dunes, thence in a westerly direction to Owston's Dump, a heap of old petrol tins. Sixty miles west of Owston's Dump, Qaret Agnes, an iron beacon is passed, and from this point the road continues west-north-west, north of the escarpment to a cairn in the Qattara Depression where it continues almost due west. In the centre of the depression, the "sabakha" (salt marsh, *see* para. 5) is encountered, and it is important to strike the crossing which is only 4 miles wide and marked by cairns at 30 ft. interval. This crossing would probably be impracticable after rain. In dry weather it can be used by lorries up to 3 tons.

The route continues over a rocky, sharp surface to Qara Oasis, where there is another patch of "sabakha" and good, slightly salt water. The track continues south-west and climbs to the plateau by two rather difficult passes, Nagb el Ahmar and Nagb el Abiad, across the plateau for 30 miles to Mugabara Pass, a narrow gorge difficult for heavy M.T. After the descent, the next 15 miles are soft and rough, and the last 10 miles into Siwa Oasis must be made by the well-defined track as there is "sabakha" on either side of it. From 15 miles east of Qara to Siwa, the telegraph line either accompanies the road or runs close to it.

Aeroplanes can land on the plateau, 4 miles east of Magabara Pass.

*Route No. 8.—Siwa—Qara—Sabakha—Moghara—Giza Pyramids.*

This route to Qara, across the Sabakha, to the Cairn 20 miles east of the crossing is identical with Route No. 7 in the reverse direction. Attention is drawn to the necessity of adhering to the marked tracks across "sabakha" and the difficulties of Mugabara, Abiad and Ahmar Passes.

At the Cairn, the track forks east-north-east for Moghara. The going is soft in many places, following the Masrab el Mahashas. The track is ill-defined and difficult to follow, and soft patches are liable to ditch lorries at the Wadi Etheila and south of Hatiyet Labaq.

After Moghara, follow route No. 6.

The above route, though practicable, is not to be recommended in view of the better alternative routes to and from Siwa.

*Route No. 9.—Cairo-Bahariya (202 miles).*

The track to be followed is identical with Route No. 7 to the southern end of the Great Dunes (Ghard el Rammak). Thence tracks which are difficult lead south-west to the Bahariya Oasis, with many patches of soft sand. It is advisable to check continually the course by compass. From a point about 6 miles east of the south-east end of Ghard el Rammak, there is an alternative well-defined route to Bahariya on which the going is uniformly excellent until it joins the former route near the Ghard el Garabi (dune which runs from north-west to Gebel Gerabi).

The pass down to the depression in which Bahariya Oasis is situated is steep and tricky. Sand dunes have to be traversed.

In the oasis there is every possible type of terrain—soft sand, gravel, boulders, rocks, soft marshes and undulations. \*

There are good landing grounds 10 miles each side of Gebel Hammad and one about 3 miles square just north of the Bahariya Depression.

This route is traversed regularly by the cars of a newly formed transport company.

*Route No. 10.—Bahariya-Siwa (234 miles).*

Details are lacking of this old caravan route. There is water at Sitra, Bahrein and Areq. The going is not very good. It is an unlikely route for military movement.

*Route No. 11.—Bahariya-Farafra (100 miles approximately)—and tracks radiating from Farafra.*

Bahariya to Farafra is a very sandy and moderate track for cars, but passable, sand tyres essential. There are a few brackish wells near the track, drinkable only in emergency. There are a few more camel tracks existing but these are of no importance. There is a route Farafra to Siwa via Ain Dalla, where the water is good and unlimited, but the track is poor. Another route, Farafra to Kufra via Bir Abu Mungar (good water, limited 25 camels a day) with poor track. The Farafra-Dakhla road is sandy and rough, poor going, sand tyres essential, no water. The Dakhla-Kharga

road is poor for a short way out of Dakhla, soft and sandy, then quite good till close to El Ghurab Station, where it gets worse till Kharga.

*Route No. 12.—Mangabad-Kharga (168 miles).*

A well marked and made up road which would present no difficulty to any Army vehicle. At present (April, 1937), only 26 miles of this route have been made up and work is now proceeding on this stretch.

This route does not follow the red track marked on the Asyut, 1/500,000 map, but is easy to follow.

Yabsa Pass is steep with a few sharp corners, but is well made and presented no difficulty to heavily laden 30-cwt. lorries.

The road from the Pass to Kharga village is well made up and well marked.

Running time for two Hillmans, one Morris (8-cwt.) and two Morris (30-cwt.) from Kharga to Asyut, seven hours.

*Route No. 13.—Kharga-Wadi Halfa via Baris and Bir Nakhelai (342 miles).*

Good to Beris. After Beris, no water till Bir Nakhelai and going poor. Difficult track to find 30 miles after Gebel Um Shersher. Drive on compass most of the time.

At Bir Nakhelai, water can be obtained from a well 3 feet. down, 16 gallons per hour. At least 20 holes could be dug. There is enough water for a battalion if care is taken over digging. It is a lengthy process as the water is mixed with clay, which fills up the bottom of the holes. The water has to stand for at least four or five hours before it is drinkable, after which it is excellent drinking. From Bir Nakhelai to Wadi Halfa by compass, chiefly good, with soft patches and no water.

A diversion from this road at Bir Nakhelai to Aswan has been done by car, but it is inadvisable and practically impassable. There is water at Bir Kubbut.

*Route No. 14.—Kharga-Oweinat (500 miles approx.).*

Mostly a plain with some hills. The route is by El Ghurab (disused station)—Bir Tewfawi (dig for water which is quite good)—Bir Messaha. Between these wells wonderful going, but Bir Messaha is very difficult to find in a slight

depression. Water unlimited at Bir Messaha, where there is a well, 67 metres deep with a hut and a winch, a rope should be taken. On to Oweinat the route is fair.

From Dakhla, there is a poor alternative route to Oweinat and not advisable to take.

In Sudan Territory there is a very good route *via* Selima.

*Route No. 15.—Idfu—Wadi Halfa (266 miles).*

There is a road leading to the desert about 3 miles south of Idfu. For the first 15 miles the going is quite good over a gravel plain with soft patches. Then for 35 miles there stretches a gravel plain over which the going is excellent for all vehicles. 55 miles from Idfu, an undulating sandstone plain is reached with patches of soft sand. This type of desert continues to the track junction 72½-mile post, where tracks branch to Aswan.

From 72½-mile post, the going is rough for 5½ miles. Then a level plain of soft sand is reached, making progress slow due to the boiling of A.F.V.'s radiators. 94½ miles from Idfu, the going is rough over a sandstone plain with patches of soft sand. The Selim Tree is situated 112 miles from Idfu and in this locality the going is very rough amongst sandstone hills. After proceeding 10 miles a sandy plain is reached and for 12 miles the going is good. 139½ miles from Idfu, there is a group of sandstone hills, 2 miles to the south of which lies a solitary conical hill. At 161 miles from Idfu, the going is fair. The country becomes hilly and wadis have to be negotiated with care or vehicles will stick. Reconnaissance is necessary. 217 miles from Idfu, there is a sand-dune to the west of the track, going is good and a flat-topped hill is left to the east. Fair going is now experienced till an escarpment is reached, down which the sand is soft. After this the going is fair to Wadi Halfa, though inclined to be soft when nearing this place. Planes could land on the plains where going is good in most places.

## 11. Landing Grounds

The list of aerodromes and landing grounds contained in Appendix 5 includes the recognised landing grounds of the Western Desert. In addition to the possible landing grounds which have been mentioned in the foregoing notes on the oasis and desert tracks, there are many places on the plateau, and south of the plateau in the lower desert, where good landing grounds for aeroplanes are available.

Many such open spaces are adjacent to the main car routes. A warning is necessary about the danger of attempting to land on sabakha, which looks attractive from the air.

### C.—The Eastern Desert

(See Map No. 1.)

Physical.

Administration.

Population.

Principal Towns. Hurghada, Port Safaga, Qosseir.

Climate and Water.

Accessibility.

Communications. Roads, Desert Tracks.

Landing Grounds.

Resources.

#### 1. Physical

(a) *General*.—The northern apex of the Eastern Desert is bounded by the Delta of the Nile and the Suez Canal. The remainder to the Egypt-Sudan border by the River Nile and the Red Sea. The whole of the area to the east of the Nile is desert.

(b) Commencing at Kantara on the Suez Canal, the desert increases in width further south. From the cultivation at Tel el Kebir to the Canal at Ismailia, its width is approximately 30 miles, whereas the distance from Cairo to Suez is 80 miles. On the desert north of the road from Cairo to Suez, camel thorn grows in patches, providing some grazing for camels. Except for this very sparse vegetation, the desert is barren.

(c) South of the Cairo-Suez road is a high plateau which stretches from the Nile Valley, between Ma'adi and Kurrimat, to the Gulf of Suez between Gobbet el Bos and Ras Zafarana. This plateau is intersected by steep-sided wadis on the western side and rugged hill features near the sea, where it is called the North Galala Plateau. South of the plateau, the Wadi Araba provides a means of communication between the Nile Valley and the coast.

To the south of Wadi Araba is the mountainous country of the South Galala Plateau. Thence mountains stretch southwards to the southern border. A series of granite ridges separated from the Red Sea by a coastal plain of

varying width, run from north to south. Roughly 30 miles wide in the north, south of Qosseir they spread out over almost the whole area between the sea and the Nile Valley.

These mountains adjacent to the coast are very steep and rugged. The highest mountain in the area is Gebel Sheyib, 7,151 ft. in height, situated about 30 miles south-west of Hurghada. The average height of the main features is about 3,607 to 3,935 feet, with steep and narrow wadis in between.

Running northwards from Qena, where the Nile bends westwards, the Wadi Qena affords some open country west of the coastal ridge, but to the west of this Wadi Qena, as far as the Nile, stretches another plateau intersected by steep sided wadis, similar to the western part of the North Galala Plateau. The escarpment on the western side of the Wadi Qena towards the Nile can be ascended by M.T. up the Wadi Um Omeiyid, but otherwise appears impassable as far as can be ascertained by air reconnaissance. Further north, the watershed between Wadi Hawashia and Wadi Tarfa is easily crossed.

## 2. Administration

The country is administered by the Frontiers Administration (Red Sea District) (*see* Section A, Chapter XVIII). The chief military or police posts are at Gobbet-el-Bos, Ras Zafarana, Hurghada, Qosseir, Qena and Idfu.

## 3. Population

The country is almost entirely unpopulated, except at the trading posts along the Red Sea coast and for nomadic tribes on the Sudan border. There being no vegetation, there is nothing to attract the Arab with his flocks into the desert.

## 4. Principal Towns

(From North to South.)

*Hurghada.*—This is the Anglo-Egyptian Company's Oilfield, under a concession from the Egyptian Government, to whom the company pays a duty, 5 per cent. of all oil raised on the field. The original oilfield was at Gemsa, 40 miles along the coast, but, being uneconomical, this was abandoned about 1918 and everything was moved to Hurghada. From the anchorage in Hurghada Bay the

main buildings, hydrating and pumping plant are invisible being  $2\frac{1}{2}$  miles inland and apart from a few pylons and odd tanks the ordinary individual would hardly suspect that a large oilfield existed. Near the jetty stands the manager's house close to the storage and water-tanks on which the entire personnel are dependent. Ships can come alongside the jetty which is about  $2\frac{1}{2}$  miles from the oilfield. The population consists of approximately—

40 British, including families.

40 other Europeans, including families.

2,500 natives, including employees.

There is, in addition, a detachment of F.D.A. police and a Mamur. There is one European doctor, who looks after all nationalities.

The weekly output from the oilfield is about 4,500 tons of crude oil. This is all shipped in the company's ships for refining at Suez.

All water and supplies are brought by sea from Suez every four days, so that there is always a certain limit to the amount of water available and gardens are not encouraged. The company keep a reserve of 1,000 tons of fresh water stored in tanks close to the jetty.

There is an English church, a European club, an English school and a European canteen, which has its own bakery in the settlement. There is also an Egyptian post and telegraph office.

The Company's workshops are capable of carrying out all repairs and cast and turn all parts required for use in the oilfield.

There is a good landing ground close to the oilfield, made by the R.A.F. Although the surface is not ideal, it is capable of accepting Troop Carriers. This has been tested with success. There are quite large stretches of hard sand on which machines could land in the neighbourhood of Hurghada.

*Port Safaga.*—Here the Egyptian Phosphate Company have a depôt for their mines, which are 20 miles inland at Bir el Huetat. The population consists of—

14 British (including 8 at the mines).

500 natives.

There is an Egyptian medical officer in residence.

There are workshops and M.T. available here, and telegraph communication with Suez. Telephone communication exists to Hurghada only.

All supplies and drinking water are brought by ship weekly from Suez. The ships tie up at the jetty, so that loading is easy. Unlimited, but brackish, water is available at the mines.

*Qosseir*.—Italian Phosphate Mines. Population—

70 Italians (no British).

3,000 to 4,000 natives.

A Mamur and 16 policemen.

1 Officer and Section F.A. (Camels).

Medical Officers :—1 Italian, 1 Egyptian, 1 Greek.

Water is obtained by condensation from the sea. The Government run a water condensing plant near the jetty which produces 60 to 70 tons of water per day at a cost of about P.T.2.5 per ton. The water is sold to the local inhabitants at P.T.3 per ton. The Italian Phosphate Company have also a plant of their own producing about the same amount. Coal is the source of power. There is no telegraph line, but an Egyptian wireless station is in touch with all stations in Egypt. All stores and supplies are brought by ships which take away the phosphates.

## 5. Climate and Water

Rain is a rare occurrence in this area, although very occasional cloudbursts are remembered. Due to the lack of rain, cultivation is impossible, yet, in spite of this, water holes and springs exist in certain places, which makes it possible for camel caravans to move long distances about the country, chiefly from the Nile Valley to the coast.

A list of the wells in the Eastern Desert is contained in Appendix 3 of this report.

## 6. Accessibility

(a) North of the road Cairo-Suez, the desert is passable for M.T. practically everywhere, except for the Khanka Sandhills, which stretch from the cultivation just north of Khanka for about 30 miles eastwards and a strip of sand dunes south of the Sweet Water Canal from opposite Tel el Kebir to a point some 15 miles further east.

Whilst there is no difficulty in gaining access to this portion of the desert from the Cairo-Suez road in the south, access to it from the Cairo-Ismailia road is a difficult problem. There is a bridge across the Sweet Water Canal at Bilbeis which is practicable to armoured cars. Light cars can reach the desert south of Tel el Kebir station by a

bridge over the El Wadi drain, but the subsequent going in the direction of Ismailia is not good owing to the presence of sand dunes close to the strip of cultivation bordering the Sweet Water Canal. The line of dunes can be crossed with difficulty south of Tel el Kebir and, this achieved, the "going" in an easterly direction is good, but as there are no crossings over the Sweet Water Canal south of Ismailia this factor is not of great military importance. There is one good access to the Sweet Water Canal at Fayid station opposite the Great Bitter Lake but no bridge. There is a bridge at Serapeum,  $6\frac{1}{2}$  miles north of Fayid station, but it is only just wide enough to take a lorry and there are other difficulties (*see* 7 (b), Route A). If at any time a bridge was constructed at Fayid station this would provide a practicable desert route from Bilbeis to Ismailia as vehicles could keep south of the sand dunes, referred to above, and from El Fayid station northwards the Suez Canal Company's road is available. As matters are at present, however, should the Cairo-Ismailia road be blocked, the best alternative route would undoubtedly be by road Cairo-Suez-Ismailia.

(b) South of this road, the central ridge of mountains forms a difficult obstacle, except by the routes defined in para. 7. Many of the wadis are passable for M.T., but the difficulty is to cross the watershed and get into the wadis on the other side.

The nature of the country is, however, such that there is unlikely to be any need for military movement, except by the tracks from the Nile Valley to the ports on the coast.

## 7. Communications

(a) *Roads*.—There are three motor roads in or adjacent to the northern portion of the Eastern Desert, namely—

Cairo-Ismailia.

Cairo-Suez.

Ismailia-Suez.

These are briefly described in Chapter XI—Roads.

(b) *Desert Tracks suitable for M.T.* (*See* Map No. 1.)

*Route A*.—(*See also* Map No. 5, Suez Canal).

*From the Cairo-Suez road near the Pink Palace to the Ismailia-Suez road north of the Great Bitter Lake* (approx. 40 miles). This has been traversed by mechanical transport, though there is a very difficult stretch of soft sand as the

railway is approached near Abu Saltan station. After crossing the railway, the only available bridge over the Sweet Water Canal is at Serapeum which is just broad enough to allow a Leyland Medium lorry to cross. Subsequently the bank of the Sweet Water Canal must be followed southwards for 2,000 yards, thence a track across half a mile of hard sand to the road west of Deversoir station. The track along the Sweet Water Canal bank would be impassable to all vehicles after rain, and generally speaking this route is a difficult one.

#### *Route B.*

*Suez-Qosseir (300 miles approximately).*—This route along the coastal plain, is suitable to all types of vehicles, except between Gobbet el Bos and Abu Derega Lighthouse, where the mountains come so close to the sea that blasting has been necessary to make the road fit for M.T. This is only suitable for 30-cwt. lorries.

The going from Ras Zafarana to Ras Gharib Lighthouse is very bad indeed in places. The worst place is from Mersa Thelemet, 5 miles south of Ras Zafarana, to Ras Azabaraban. Here the road climbs over low foothills which run down to the seashore and a very soft, steep pass has to be negotiated. After this there is a bumpy track for 5 miles, and then a long series of small, stony wadi beds with soft sand in between them has to be negotiated. A light car with air wheels should have no difficulty at any of these places, but without air wheels, it would be difficult, particularly the pass.

There is also a bad bit of going along the western side of Gamsa Bay until meeting the made-up track from Hurghada. There is no soft sand, but it is very rough and stony, with many intersecting wadi beds and ridges. Any type of vehicle can negotiate these as long as they go dead slow. The time taken to cover the journey from Suez as far as Hurghada is approximately 11 hours.

#### *Route C.*

*From Kurraimat in the Nile Valley to Ras Zafarana, via the Wadi Araba (approximately 100 miles).*—No definite track in Wadi Araba, but the going is suitable for all types of M.T.

#### *Route D.*

*From Qena up Wadi Qena-Gebel Hawashia, down Wadi Hawashia to the coast south of Ras Zafarana (approximately 130 miles).*—Soft in parts, this has not been crossed by vehicles heavier than 30-cwt. lorries.

### Route E.

*From Qena to Hurghada (approximately 120 miles).*—This is quite a good road for the first 50 miles, but it becomes very sandy during the next 30 miles. As soon as the Wadi Qena is reached, however, the road is good again. It is suitable for all types of M.T. The journey takes approximately 9 hours in an ordinary car. This route is scheduled to be reconstructed as a first-class road in due course under the provisions of the Anglo-Egyptian Treaty of Alliance, 1936. (See Appendix VI, Annex to Article 8, paras. 6 and 7.)

### Route F.

*From Port Safaga to Seyala, on the Qosseir-Qift route (approximately 40 miles).*—Lorries from the Phosphate mines use this route instead of going into Qosseir. It is suitable for all types of M.T.

### Route G.

*From Qosseir to Qift in the Nile Valley (approximately 100 miles).*—Another route branches off this to Luxor at Bir el Geyta. This route is used by the lorries of the phosphate mines and there is considerable and regular traffic. It is in good order and suitable for all types of M.T. There is a steep pass on a bend 43 miles from Qosseir and 13 miles short of Bir Fewakhir, but the surface is good and should cause no difficulty, except to heavily-loaded lorries without low reduction gear-boxes.

Along this road are many deep wells of Roman construction, giving an unlimited supply of brackish water.

The route Kus to Qosseir, and therefore virtually identical with the above is scheduled to be reconstructed as a first-class road in due course under the provisions of the Anglo-Egyptian Treaty of Alliance, 1936. (See Appendix VI, Annex to Article 8, paras. 6 and 7.)

### Route H.

*From Ras Abu Hagar (11 miles south-east of Qosseir) by Wadi Essel-Wadi Debbagh-Gebel um Atowi, over watershed to Wadi Mia-Idfu (approximately 140 miles).*—Phosphate lorries have been this way, but the going is very soft in parts. It is not recommended.

All routes mentioned above, except where otherwise stated, are considered suitable for all types of military M.T., provided suitable precautions are taken.

### 8. Landing Grounds

Landing grounds exist at Suez (2), Ras Zafarana, Hurghada, Safaga, Qosseir, Mersa Toronbi (55 miles south-east of Qosseir), Luxor and Qena. In addition, many emergency landing grounds are available along the coast on or near the many salt-bogs and mud-flats which exist.

There are suitable places for emergency landing grounds at—

(a) On the high ground west of the Wadi Araba along the route to the Nile valley.

(b) In the Wadi Qena.

### 9. Resources

Anglo-Egyptian oilfields, Hurghada.

Phosphate mines at Port Safaga and Qosseir.

The Red Sea hills contain a considerable number of minerals of various kinds, but owing to their inaccessible situation and lack of water, it is impossible to develop them.

There is no stock as there is no grazing of any sort. There are a number of gazelle in the Wadi Araba and a few ibex on the Northern and Southern Galala Plateaux.

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## CHAPTER VII

**SINAI**

(Reference Map No. 4. Maps No. 1 for Landing Grounds, 9 for Telegraphs.)

*Note.*—The Peninsula of Sinai, though an integral part of the Kingdom of Egypt, differs so materially from the remainder of Egypt that it has been found expedient to devote a special comprehensive chapter to it.

History.

Government.

General System, Arab Laws and Customs.

Population.

General, Tribal Characteristics, Religion, Languages, Labour, Attitude towards Foreigners, Normal Diet, Foreign Colonies.

Political Geography.

General Description, Frontiers, Maps and Mapping, Principal Towns—El Arish, Qantara East, Kuntilla, Nekhl, Tor, Abu Zeneima.

Physical Geography.

Coastal Plain, Central Plateaux, East Frontier, Water Supply.

Climate.

General Description. Quarantine Stations.

Communications.

Roads and Routes General. Details of Roads—Suez, Jerusalem, Suez, Aqaba, Lateral Roads. Railways, Telegraphs and Telephones.

Resources.

Aviation.

**1. History**

Sinai, by reason of its geographical position as the link between Asia and Africa, has always been and will continue to be of considerable military importance. As a battlefield, it has seen more invading and retreating armies passing through than any other country in the world—Belgium not excepted.

To Egypt especially, Sinai has always been a vital factor. Inscriptions prove that Southern Sinai was occupied by

Egyptian forces as early as 5500 B.C. From that date until 1914, no less than 45 armies have crossed the peninsula. Remains of great historic interest are to be found throughout Sinai. The Monastery of St. Catherine is probably the oldest inhabited building in the world, while numerous inscriptions and ruined buildings testify to the number of races who have staked their claim in the wilderness.

It was assumed in 1914 that Sinai itself was a sufficient natural protection for the Suez Canal. The fallacy of this assumption was soon made clear. By the 13th January, 1915, a considerable Turkish force had assembled at Kosseima and, advancing by the central route through Hassana, was by the end of January within striking distance of the canal at Ismailia. Two abortive attacks on the canal followed, but the advance over difficult desert country by a comparatively waterless route, dragging heavy guns and pontoons, was a military achievement which calls for admiration.

In February, 1915, an unsuccessful attack was made on Abu Zeneima and Tor (south-east of Suez). This was noteworthy for the fact that it was entrusted to a locally recruited Bedouin irregular corps with Turkish backing. The mining company's machinery at Abu Zeneima was destroyed, but the attack on Tor, defended at the time by a battalion of Ghurkas, was a costly failure. The Arabs suffered considerable loss and took no further part in the campaign, except to act as Secret Service agents for both sides in turn.

In July, 1916, a Turkish advance in the Northern Coastal area culminated in the battle of Romani on the 3rd August, when the Turks were driven back with a loss of half their forces. Taking advantage of this success, General Murray assumed the offensive, capturing El Arish on 20th December, 1916, and driving the enemy from his final stronghold at Rafa on the Sinai Eastern frontier on 8th January, 1917.

The course of the war passed on to Palestine, leaving little mark on the life of the country, except the establishment of a large base at Qantara and Military Schools at El Arish. The systematic progress of the British advance was made possible by the construction of the trans-Sinai railway and pipe-line, but it is worthy of note that the necessary labour was not forthcoming from local resources, but from Egyptian fellaheen embodied in the Camel Transport and Egyptian Labour Corps. In fact, the Sinai Bedouin proved himself even more useless as a labourer than as a soldier.

Since the war, the local Bedouin have reverted to their normal life. Tribal raids, a little brigandage and smuggling have been the extent of their martial achievement.

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Yesterday and To-day in Sinai. (Major Jarvis.) An admirable, comprehensive and readable book, strongly recommended to the Military student.

## 2. Government

### (a) *General System*

The Government of Sinai is vested in the Frontiers Districts Administration through a Military Governor, at present (1937) a British officer of that body, with headquarters at El Arish. The Governor is responsible for the maintenance of public security, the administration of laws, taxation, public works of all kinds, anti-contraband measures, agriculture, etc.

For administrative purposes, Sinai is sub-divided into four districts, Northern, Central, Southern and Qantara, each of which is governed by a Mamour or District Inspector, who is responsible for public security and the general control of his area.

Public security is maintained by a force of 145 mounted and 104 dismounted police, the great majority of whom are locally enlisted. The force contains a small percentage of Sudanese, who are mostly N.C.Os. The mounted police provide their own camels and saddlery.

In addition, there are the Sudanese Camel Corps and Car Patrol of the Frontiers Districts Administration (*see* Chapter XVIII, Section A). They are a separate force, performing the functions of gendarmerie. The Camel Corps consists of four sections (the unit is a section of 40 men) with headquarters at El Arish and sections at El Arish, Kuntilla, Shatt and Tor. The Car Patrol has a section at Kuntilla of seven Ford cars (four Ford pick-up trucks and three Ford 2-ton lorries) with desert tyres and two Vickers machine-guns.

Police and Frontier Districts posts are shown on Map No. 4. An Egyptian Army battalion and battery are stationed at El Arish.

(b) *Arab Laws and Customs*

Although the Egyptian code of law obtains in Sinai, the Egyptian Government passed by Khedivial Decree the Sinai Law of 1911. This gives the Arab courts "Authority to give judgment in accordance with well-established local usage and custom, save in so far as the same should be contrary to equity and good conscience". This was regarded by the Arabs as a great concession on the part of the Government, as it recognized the responsibility of the tribe and not of the individual. Thus the procedure is that, when a crime is committed, the responsibility rests with the Sheikh of the tribe, who must bring the criminal to book or make the necessary restitution. The Sheikh of the tribe is paid from £3 to £5 per month and from time to time receives decorations, and robes and swords of honour.

The main differences in the two codes are as follows :—

*Criminal Cases.*

(i) *Murder.*—By ancient Arab custom, any relation of a murdered man had the right to take revenge on the relations of the murderer. This custom is no longer recognized, but the payment of compensation by the murderer's tribe to avoid hanging and the commencement of a blood feud is permitted. The average price of a man's life is £200, which is most conveniently paid in camels. When a murder is committed, the criminal probably crosses to the Hedjaz or Transjordan, and may not be caught for many years. When arrested, he may or may not receive a term of imprisonment, according to the reasons for which he committed the crime.

(ii) *Theft.*—In cases of theft, the injured tribe is awarded the value of the article stolen, plus a small percentage for insult.

(iii) *Offences against Women.*—In cases of assault, the woman's word is taken without corroborative evidence. The fine for rape is £100 if committed by day and £50 if committed by night; the distinction between day and night being due to the fact that in the daytime women act as shepherds and water-carriers and are consequently unprotected. At night they should be in their husband's tent.

The above modifications of the existing Egyptian Penal Code refer only to purely Arab cases. When a crime is committed against a non-Arab, the ordinary law of Egypt is administered.

(iv) *Civil Cases*.—The Egyptian Government does not recognize the ownership of desert lands by Arabs, but merely allows them the rights of cultivation. The Government reserves to itself the right to claim land as Crown property in the event of it being required for public purposes or becoming of considerable value through the extension of the irrigation system. A deed is held by the Arab who cultivates a certain piece of land, but no compensation is paid for deprivation unless the land has actual value and the cultivator suffers loss.

### 3. Population

#### (a) *General*

A description of the characteristics of the Bedouin of Egypt proper is given in Chapter III—Population. The same holds good for the Arab of the Sinai Peninsula.

The number of nomad Arabs in the peninsula is uncertain owing to the dislike of the Arabs to being numbered. It is probable, however, that there are about 25,000 Bedouin, in addition to small Christian communities at Abu Zeneima, Tor and the Monastery of St. Katherine.

The word "Arab" is applied by Europeans ignorant of the Near and Middle East to every inhabitant of northern Africa and western Asia. To be exact, an Arab must be a native of Arabia, though the Bedouin of Sinai have an absolute claim to the title since they are largely off-shoots of the great tribes of Arabia.

The distinguishing mark of the true Arab is his lack of beard. He can normally only grow a small fringe along the line of his jaw, terminating in a tuft at the point. A Bedouin with a large beard of the "W. G. Grace" type is almost certainly the descendant of one of the many garrisons of Sinai, left there by invading armies. A true Arab is small and wiry, with either a long or eagle-shaped nose. One tribe consists entirely of big, well-shaped men of 6 ft. or more. They are probably the descendants of a Roman legion, left there after the Mohammedan Invasion. Others again are undoubtedly Moorish in origin. Despite the difference of their origin, their habits are much akin and all insist on their pure Arab blood.

#### (b) *Tribal Characteristics*

The chief tribes and communities of the peninsula are shown on Map No. 4. Locations must be regarded as being approximate only, as some of the tribes are very scattered.

Numbers, as already stated, are difficult to determine. The following are some notes on the characteristics of the most important tribes. For convenient reference to the map, they are considered from north to south :—

(i) *The Arishia* (inhabitants of El Arish, under which heading further details will be found), are quite distinct from the Bedouin. In some families, the heavy black or brown beard and dark eyes of the Syrian predominate, whilst others have the fair or red hair of the European, with blue or grey eyes, which may be due to the stay of a Bosnian battalion during the Turkish regime, or to the promiscuous strayings of Napoleon's or Allenby's troops. They number about 10,000 and are to be found in other parts of Sinai where the land is sufficiently valuable to appeal to their acquisitive tendencies.

(ii) *Sawarka*, number about 4,000. Inhabit the coast from Bir el Abd to a few miles west of Rata. Fairly well-behaved.

(iii) *Rumeilat*, number 1,000 and live east of the Sararka country to the frontier on the coastal belt. Well-behaved and peaceable.

(iv) *Bayyadin*, number about 700. Live near Bir el Abd on railway. All big men, standing 6 ft. or more, with short, straight noses. Certainly not of Arab blood, although insistent on their pure Arab descent. Probably descendants of Roman colonial legion or of some European stock. Not trustworthy, and active smugglers.

(v) *Teaha*, number about 1,500 and inhabit the country around Kosseima. Their chief is generally recognised as the headman of Sinai. At the present time trustworthy and friendly towards Europeans.

(vi) *Terrabin*, number about 700 and inhabit the country around Maghara and Hassana, with an off-shoot at Moweiba on the Gulf of Aqaba. They are fairly well-behaved and moderately trustworthy.

(vii) *Ayada*, number about 260 and are to be found near the Gebel Yellag and close to the canal. An unsatisfactory tribe who would probably be found spying for both sides in the event of war.

(viii) *Howeitat*, a small branch of some 250 of this important Transjordan tribe are to be found in the neighbourhood of Shatt (opposite Suez) and scattered in other parts of Sinai. They are treacherous and not to be trusted.

(ix) *Lehiwat*, number about 250 and are to be found in south-east Sinai and the Wadi Araba and at El Themed. They are not to be trusted and were responsible for the murders of Palmer, Charrington and Gill in 1882.

(x) *Sawalha*, number about 480 and live around Abu Zeneima. No marked characteristics.

(xi) *Garasha*, number about 200 and live south of Abu Zeneima. Rather above the average of southern Sinai tribes and do a little work.

(xii) *Aulad Said*, number about 500 and occupy the Wadi Hebran towards central Sinai. No marked characteristics.

(xiii) *Gebeliya*, number about 400 and live round the Monastery of St. Katherine. They are descendants of Wallachian slaves sent to the monastery in the 6th century A.D. Professedly Mohammedans, their religion has a distinct Christian flavour.

(xiv) *Oleigat*, number about 900 and live north of Tor. They do some work and are rather above the average of southern Sinai tribes.

(xv) *Mezeina*, number about 2,500 and inhabit the apex of the peninsula. A weak-kneed, spineless race.

#### (c) *Religion*

Except for the small Christian communities already mentioned, the inhabitants are Mohammedans.

#### (d) *Languages, Interpreters and Education*

Arabic is the common language of the country. The Bedouin are uneducated and, except in such places as El Arish, it would be impossible to find suitable persons to act as interpreters. El Arish might produce a few interpreters capable of employment in a humble capacity.

#### (e) *Labour*

The Bedouin are useless as labourers. The Arishia are workers and it is estimated that some 2,000 first-class labourers could be recruited, if necessary, from the neighbourhood of El Arish. They could be employed, if protected, anywhere in the Peninsula at a wage of six piastres per diem.

*(f) Attitude towards Foreigners*

At present (1936) friendly, but the Arab is proverbially untrustworthy and a continuation of this feeling cannot be relied on.

*(g) Normal Diet*

This cannot be measured by ordinary standards. The Bedouin eat and drink what they can get, and are accustomed to exist on the barest minimum.

*(h) Foreign Colonies*

But for a few officials, British and Egyptian, the monks of the Monastery of St. Katherine, the management of the mines at Abu Zeneima and a few Greeks in El Arish, there is no foreign population worthy of notice.

#### 4. Political Geography

*(a) General Description, Frontiers and Boundaries*

Sinai is a heart-shaped peninsula, roughly 150 miles wide at the north, from east to west, tapering to a point 260 miles to the south.

As Palestine is administered under a British mandate, there are no material difficulties with regard to the only artificial frontier and, in point of fact, the nomadic population of this region cross backwards and forwards over the frontier without let or hindrance.

*(b) Maps and Mapping*

The physical features of Sinai have been surveyed with reasonable accuracy and in this respect the maps published by the War Office are reliable.

The best maps for general use are the G.S.G.S. 2761 1/250,000 Sinai Peninsula Series published by the War Office (reprinted 1936) and the 1/500,000 North and South Sinai published by the Surveys of Egypt.

*(c) Principal Towns and Villages*

With the exception of El Arish, there are no towns in this backward and undeveloped country which lend themselves to detailed analysis. Apart from a harbour at Tor and a jetty at Abu Zeneima, there are no ports or landing places.

The following is a brief description of the most important towns, villages and posts :—

(i) *El Arish*.—The capital of Sinai lies  $1\frac{1}{2}$  miles inland from the Mediterranean Sea, 28 miles west of Rafa. The town has a neat, clean and compact appearance, unlike the majority of Eastern towns. Stone is not obtainable locally and most of the houses are made of mud-brick. The principal buildings, however, are solidly constructed from stone taken from the old forts destroyed by British gun-fire.

Included amongst the principal buildings are the Governor's house, the Governorate, Government offices, prison, district offices, hospital and rest house. With the exception of the hospital, these buildings are mainly grouped on the eastern outskirts of the town. There are also a few shops.

The streets are narrow, the majority being just wide enough to admit the passage of a motor car. One or two of the main thoroughfares have been tarmaced and are a little wider. A tarmaced road leads out of the town to the railway station close to the shore ; a hard clay road bifurcates from this road to the barracks of the Egyptian Army battalion and battery, about 1 mile from the town.

There is ample space for camps south of the town.

The hospital, at the west end of the town, is a well-run institution with 19 beds.

There are two small power stations in the town, one of 220-volts D.C., the other of 110-volts D.C., pumping water and supplying electric light to the principal buildings and a portion of the town. It is probable that one of these will be re-equipped in the near future with a more satisfactory engine to make the electric light system complete.

There is no lack of fair water at El Arish, and in the town and its vicinity there are over a hundred wells, some being equipped with pumping machinery. The majority are really water-holes supplying water for irrigation purposes. Water is reached at sea-level. Unlimited supplies could be obtained by boring, and the levels of the wells now in use remain constant throughout the year.

The principal buildings have cesspool sanitation. The whole atmosphere of the town is progressive and the population has increased greatly since the war, now

numbering about 10,000 persons. The inhabitants are descendants of every known race in the Near and Middle East. They have the reputation of being grasping and avaricious, and make excellent, though dishonest, business men.

It is estimated that in time of war, 2,000 first-class labourers could be recruited from the Arishia, who have not the reluctance to work of the genuine Arab.

El Arish, being on the railway, is the main market for Sinai. Quail are extensively netted and sent to Port Said in September and October. Portions of the country round about the town are cultivated, and flocks of sheep and goats are maintained. It is estimated that local supplies could support a force of one Infantry Brigade for a week. After that, all supplies would have to be brought by rail.

Landing supplies from the sea would be a very difficult and dangerous operation, as the wind, especially from the north-east, raises a surf sufficient to capsize small boats. Larger boats are unable to approach the shore owing to a small sandbank some 50 yards out to sea.

There is a landing ground at El Arish, details of which will be found in Appendix 5. It is frequently used by aeroplanes flying between Egypt and Palestine.

(ii) *Qantara East*.—Qantara East lies on the Suez Canal between Port Said and Ismailia. It is the terminus of the Palestine Railway. Before the war, Qantara East consisted of one mud hut and one palm tree. During the war, its position at the junction of the Egyptian and Palestine Railways made it an ideal base. At the height of its importance, it covered 8 square miles—the biggest military city the world has ever seen.

To-day (1937), there are only 500 inhabitants, nearly all of whom are engaged on railway or government service. It is the head of the Qantara District and is the seat of a Mamour (head of a district). The principal buildings are an hotel with two beds, a hospital with four beds and the railway sheds. There are no power stations or sanitary appliances other than incinerators.

(iii) *Kuntilla*, about 5 miles from the eastern boundary in the latitude of Suez, stands on twin hills in a very strong position, as an unbroken plain extends in all

directions for several miles. As Kuntilla commands the only water supply in the vicinity, it is a frontier post that may one day be of considerable importance.

(iv) *Nekhl*, 80 miles south of El Arish, is usually shown on the maps as a town, but it is, in fact, a deserted village. The opening of the Palestine Railway and the sea route from Suez to Jeddah effectually killed Nekhl, which existed entirely on the pilgrim traffic. At the last census, the population was six, of which four were policemen.

(v) *Tor* is a small harbour on the east coast of the Gulf of Suez, about 150 miles south of Suez. It is a quarantine station for pilgrims returning from Mecca. It has a population of about 1,000, partly Greek Christians, the remainder of the Red Sea seafaring type.

(vi) *Abu Zeneima*, on the east coast of the Gulf of Suez, some 80 miles south of Suez, possesses a jetty and is a small mining settlement for the extraction of manganese. It has recently suffered owing to the slump in the steel trade.

## 5. Physical Geography

Physically, the country divides itself into three parts; the coastal plain, the central high gravel and limestone plateau, and thirdly, a tumbled mass of granite mountains forming the apex of the Peninsula.

### (a) *The Coastal Plain*

In shape resembles an inverted and reversed letter L, fringing the shores of the Mediterranean on the north and the Suez Canal and the eastern shore of the Gulf of Suez on the west. The bulk of this plain consists of sand dune country, very difficult to traverse.

The sand dunes of the northern coastal plain, extending inland for a distance of some 15 to 30 miles, are probably of comparatively recent origin, as invading armies of the past have crossed this area without difficulty, whereas to-day they form a considerable obstacle and are not traversed by a single road fit for transport. British troops, however, fought their way across this plain in the Great War and have left a substantial relic of their progress in the shape of the Palestine Railway. The northern coastal sandy belt dies away a few miles east of El Arish, giving place to a sandy loam which yields excellent crops.

The coastal plain of the west may be said to bifurcate from the northern plain some 30 miles north of Suez, and southwards of this point forms a narrow fringe between the Gulf of Suez and the plateaux and mountains of the interior. In character, it is similar to the Coastal Plain of the north as far south as Suez, after which the sand-dunes peter out. It is crossed by some indifferent tracks and one road with a bitumen surface, which starts at the Kubri Ferry and enters the Plateau of El Tih at the Mitla Pass. This road, the highway to Palestine, is described in detail in Section 7 (a) of this chapter.

(b) *The Central Plateaux*

Fifteen to thirty miles from the Mediterranean Sea, there begins a series of upward slopes towards the vast Plateau of El Tih, which extends southwards some 90 miles to the higher level of the Egma Plateau and culminates in a huge wedge-shaped limestone massif.

The slopes to the northern edge of the Plateau of El Tih are not to be regarded as a steady and continuous incline. They are broken by several mountainous ridges, some of which, such as the Gebel Hellal, Gebel Maghara and Gebel Yellag, rise to a considerable height. The height of the Gebel Yellag, for instance is 3,575 ft. The slopes are pocketed with sand-dunes, which are inclined to change position from time to time; one in the neighbourhood of Bir Hassana has extended and grown  $1\frac{1}{2}$  miles in 10 years, covering a wide gravel expanse that a decade ago was entirely free from sand. Likewise, the central plateau is not a level plain, but a high gravel and limestone area intersected by wide wadis or dry torrent beds.

The southern mountains rise to a height of 8,000 ft. and include the granite peaks of the Gebel Serbal, Gebel Musa, Gebel Katherina, Gebel Um Shomer and Gebel El Thebt.

The characteristics of the central plateau and southern mountains are aptly described in the words used by Captain Palmer at the eighth Geographical Congress held in Paris in 1900. "The greater part of the Sinai Peninsula is one of the most mountainous and intersected areas on the earth's surface. Sand is rarely met with, plains are the exception rather than the rule, the rugged routes are often very steep and, for the most part, wind about a labyrinth of narrow valleys, shut in amongst the rocks. It is a veritable desert in the truest meaning of the term, a desert of rocks, gravel and boulders, of bare precipices and sombre mountains, of valleys and arid plateaux; the whole forming a scene of absolute desolation."

(c) *The Eastern Frontier*

But for the first 50 miles south of Rafa, where it crosses the Northern Coastal Plain, the Eastern Frontier intersects such country as described in the previous paragraph. Whilst rocky peaks facilitate its delimitation, small parties can cross the frontier anywhere on foot, except from the Gulf of Aqaba north for 60 miles. This portion of the frontier is particularly rough and can only be negotiated at the passes. At the head of the Gulf of Aqaba, the high land falls away 2,500 ft. to sea-level in 3 miles.

(d) *Water Supply*

From a military point of view, interest in the water supply is mainly confined to the vicinities of :—

(a) The railway across the Northern Coastal Plain.

(b) The main Suez-Jerusalem road through Sinai territory.

(c) The road bifurcating from (b) through Nekhl, El Themed and Kuntilla to Aqaba.

(i) *Northern Coastal Plain.*—Interest in this area, though at present confined to the vicinity of the railway, may in the future become more general as the use of "desert" tyres opens up motor routes which are at present impracticable. Speaking generally, abundant water of fair quality can be found in this area by sinking wells to sea-level. Surface water collects after rain, but is usually unfit for Europeans. In this connection, it should be noted that as a general rule throughout Sinai, surface water should be avoided as it is probably salty and contaminated by Arabs and their flocks.

As an example of how the water supply in this area can be developed, it is worthy of notice that there are over 100 wells in the vicinity of El Arish and these show little seasonal difference.

(ii) *The main Suez-Jerusalem Road.*—After crossing the canal at El Kubri, there is no water of military importance until Bir Hassana (96 miles), where there is a good supply capable of development. At Kosseima, there is a good supply of water and an excellent supply at the Wadi Ain Gedeirat, 5 miles away. Here flows one of the few streams to be found in Sinai, but the supply is probably incapable of further development. Water is to be found at Birein, a few miles further east, and just over the frontier at El Auja, there is an excellent supply.

(iii) *Road Nekhl-Kuntilla-Aqaba*.—There are good supplies of salty water at Nekhl (85 miles from El Kubri) and excellent water at El Themed. These supplies could be developed by boring. There is also a good supply at Kuntilla.

In Southern Sinai, ample water exists in the mountain ranges overlooking the sea, but the country is so rugged that it is most unlikely that troop movements will take place in this area.

To summarize, though water-holes or wells sufficient for the needs of a small nomadic population exist roughly every 15 to 20 miles, the movement of any large body of troops across Sinai would produce a definite problem, as there are no supplies of military importance west of the line El Arish-Hassana-Nekhl. In the event of a protracted military occupation, there are several sources east of this line capable of development.

Full details of the wells and water-holes are given in Appendix 3.

## 6. Climate

On an average, most parts of Sinai experience about 6 days' rainfall in a normal year. It is unusual for rain to fall before 15th October or after 1st May. During the months of December to March, there is an occasional snow-fall in the mountains of the south. When rain does fall, it is frequently sufficiently heavy to wash away entirely the road tracks which cross or follow the course of the numerous wadis.

The rainfall is sufficient to produce scrub bushes and stunted trees wherever the soil can absorb the rain and, in a few places scattered over the Peninsula, crops are cultivated by the Arabs in a haphazard fashion. Water-holes or wells exist roughly every 15 or 20 miles.

Little statistical information is available, but for military purposes the climate may be regarded as similar to that of Egypt, except that the mountainous nature of the country produces winds of piercing keenness in winter, when it is frequently extremely cold.

The same precautions against heat in summer, prevalent diseases and impure sources of water, should be taken. (See Chapter IX—Climate.)

*Quarantine Stations*.—Quarantine camps, administered by the Egyptian Government, exist at Tor (see Section 4 (c) (v)) and at Ain Musa (Moses Well) and El Shatt, near Suez.

## 7. Communications

### (a) *Roads and Routes, General*

Military interest in the roads and tracks of Sinai lies chiefly in those which traverse the country from west to east. Of these there are only two, (a) the main Suez-Hassana-Kosseima-Jerusalem road, and (b) the bifurcation from this road through Nekhl-El Themed-Kuntilla to Aqaba, and these roads will subsequently be described in some detail.

It must be remembered, however, that in parts of Sinai movement is not confined to the roads. The central plateau is of hard gravel, permitting military vehicles to leave the track in many places. The development of the "camel's-foot" desert tyre is already beginning to make itself felt and it seem probable that in a few years' time, motor movement on a wide front will be possible in the region north of the Suez-Jerusalem road as far east as Hassana, a region which is at present regarded as inaccessible except to specially equipped desert type cars.

At the present time, the belt of sand dune country bordering the Mediterranean coast and the Suez Canal is, for the most part, impassable to military vehicles.

Southern Sinai is an unlikely zone for military operations. It is a broken and confused mass of granite mountains and, generally speaking, is impassable to motor traffic. Actually, the wadis or dry water-courses that intersect the mountain ranges are, for the most part, moderately smooth, and consist of granite shingle, bound with clay deposit. Many of them could be negotiated by cars, if a car could be driven to them, but the main difficulty is for a car to pass over the watershed from one wadi to another. This portion of the Peninsula will not therefore be referred to again.

### *Road Details. (See Map No. 4.)*

(i) *Suez-Jerusalem road.*—Generally speaking, a very fair desert road, capable of carrying all types of armoured fighting vehicles. Like all desert roads, liable to wash-outs in wet weather. In such circumstances, traffic is liable to be held up from 24 hours to 3 days in order to allow the track to dry. Working parties would be necessary to repair places where the worse wash-outs had occurred.

Crossing the canal at El Kubri Ferry (for details, see Chapter VIII—Suez Canal, para. 4), a new road now runs direct to the Mitla Pass, eliminating the detour which

had to be made in the past. It has a bitumen surface the whole way. The road runs through some sand dunes which tend to drift across the road and where they do, care in driving is necessary. This section of the road is suitable for night driving with the exception of the last 4 miles, which is a stiffish uphill climb to the summit of the pass.

The road drops sharply from the summit down the Wadi el Mitla and is narrow and built up, but from there onwards through the Wadi el Haj for about the next 18 miles the surface is good up to the junction of the Suez-Hassana and Suez Nekhl roads. This portion is also suitable for night driving.

There follows 50 miles over an open plain to Hassana, all good going in dry weather.

The road Hassana-El Kosseima (46 miles) is a particularly well-engineered section of this route. Eleven miles after Kosseima, the road crosses the Palestine frontier.

(ii) *Suez-Aqaba road*.—A desert track bifurcates from the above road, 18 miles east of the Mitla Pass, and runs thence through Nekhl, El Themed and Kuntilla to Aqaba (146 miles from road fork).

A rough track, not to be compared with (a), but practicable to armoured cars, except for the descent into Aqaba, a steep slope of 1 in 3 with many hairpin bends, recently tarmaced. For this reason, the road should be avoided if possible.

(iii) *Lateral Roads*.—*Nekhl-El Hassana* (41 miles).—Good desert track, practicable to all military vehicles, except for a short stretch at Thilmat el Thamakat, 3 miles north of Nekhl, which requires widening.

*El Hassana-Kosseima road to El Arish* (58 miles).—A good desert track where high speeds can be attained in places in dry weather.

*Kuntilla-Kosseima* (56 miles).—Desert track practicable to Armd. C.s.

Other tracks, marked on the map, may be taken as practicable to Armd. C.s and lightly laden lorries, provided due care is taken in driving.

#### (b) *Railways*

There is only one railway through Sinai, the main Cairo-Jerusalem line, running through Sinai territory from Qantara East to the frontier at Rafa. Details will be found in Chapter XIII.

(c) *Telegraphs and Telephones*

These are shown diagrammatically on Map No. 9. Further details are as follows :—

*Wireless*.—(i) Government Station at El Arish. Normally works to Cairo and provides touch with the Palestine Police and Transjordan.

(ii) Tor. A small station is sometimes open during the Pilgrimage season.

*Telegraphs*.—(iii) Qantara–El Arish–Rafa–Jerusalem (not used for internal messages on account of the Cairo–El Arish wireless service).

(iv) Suez–Abu Zeneima–Tor. Maintained by the E.S.T. The system is similar to that of other E.S.T. lines, which will be found described in detail in Chapter XIV.

*Telephones*.—F.D.A. line. Circular route El Arish–Aqaba–Nekhl–El Arish, with branches to various posts en route (*see* Map No. 9).

Single overhead line with earth return, maintained by F.D.A. personnel. A small supply of line stores is kept at El Arish. Telephones are magneto ringing instruments.

## 8. Resources

A little corn is grown in the coastal plain near Rafa and at other places where water is found. Stocks are sufficient for local population only.

A few cattle are kept near El Arish, but in insufficient numbers to be of military value.

It might be possible to hire about 500 camels locally, but no other forms of transport are available.

The mineral resources are lacking or unexploited, except for manganese mining at Abu Zeneima.

## 9. Aviation

*Landing Grounds*.—These are as marked on Map No. 1.

*Air Routes*.—There are three main air routes—

(a) The Northern or Coastal route, Qantara–El Arish eastwards.

(b) The Middle route, Little Bitter Lakes–Dheiga–Beersheba.

(c) The southern route, Suez–Nekhl Aqaba.

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## CHAPTER VIII

**SUEZ CANAL**

(Reference Map, No. 5.)

**General.**

Administration.  
 General Description.  
 Transit by Night.  
 Sweet Water Canal.

**Detailed Description.**

By Sections.

**Currents and Tides.****Communications within the Suez Canal Area.**

Roads.  
 Rail.  
 Air.  
 Cables and Land Lines.  
 Wireless.

**Canal Crossings.**

Qantara.  
 Ferry Post.  
 El Kubri.  
 Tank Crossings.

**1. General***(a) Administration*

The Suez Canal, lying north and south between Port Said and Suez, was constructed by Ferdinand de Lesseps, a French engineer, and opened to traffic in 1869. By an International Convention, signed 29th October, 1888, it was declared neutralized.

Vessels of all nations, whether armed or not, are allowed to pass through it, either in peace or in war.

The canal is operated by an international company of French origin, with the offices of the central administration at 1, Rue d'Astorg, Paris. The local head office is at Ismailia, and there are offices in Port Said, Port Tewfik (Suez) and Cairo.

In 1875, His Majesty's Government acquired 46 per cent. of the shares by purchase.

The management of the canal is entrusted to a council of 32 administrators, of whom 10 are British (three representing His Majesty's Government and seven of the ship-owning interest).

The original concession expires in 1968. A draft convention for its extension was rejected by the General Assembly of Egypt in 1910.

(b) *General Description*

The northern entrance is situated at the inner end of the basins at Port Said, and its whole length, from the high lighthouse at Port Said to its junction with the Red Sea at Suez, is 101 land miles ( $87\frac{1}{2}$  nautical miles). Of this distance, 77 land miles ( $66\frac{1}{2}$  nautical miles) are actual canal, whilst 24 land miles (21 nautical miles) of the navigation runs through Lake Timsah, and the Great and Little Bitter Lakes.

Throughout the length of the canal, the distance from Port Said Lighthouse is shown on boards, in miles and tenths on the eastern bank, and in kilometres and hectometres on the western. The latter numbers are shown towards the road, as well as the canal, in those places where the two are close together.

Mooring bollards are fixed in the banks of the canal about one-third of a cable apart. "Gares," or stopping places, 2,460 ft. in length and 49 ft. broad, are provided in the canal at intervals of 5 or 6 miles, at each of which there is a signal station.

Excavations had to be carried out throughout the whole length of Lake Timsah, of the Little Bitter Lake, and a portion of the Great Bitter Lake, leaving a distance of only 8 miles in the latter, where the natural depth exceeded that of the canal, and where, consequently, no excavations were necessary.

The width of the canal at the surface varies, but throughout the greater part of its length is about 320 ft. Where the banks are high it is 280 ft., but where the banks are low, the breadth expands to 330 ft.

The narrows occur in the neighbourhood of El Gisir (just north of Lake Timsah), Serapeum (between Lake Timsah and the Great Bitter Lake) and Shallufa (between the Little Bitter Lake and Suez) and are respectively 8,  $5\frac{1}{2}$  and 4 miles in length.

All the sharp turnings, which at one time existed, have been widened and new "gares" (sidings) constructed. The width of the floor (originally 72 ft.) has been increased throughout to 150 ft., and there is now a general depth through the canal of 39 ft. Vessels of 33 ft. draught are permitted to pass through.

The work of widening the canal from 118 ft. to 150 ft., on the floor, ended in 1914, since which date much larger ships than formerly have used the canal with facility, sometimes employing a tug ahead, but using their own steam.

Large ships which have recently passed through the canal include :—

Date.	Name.	Length in feet.	Beam in feet.	Draught in feet.	Displace- ment in tons.
1920	H.M.S. "Malaya"	640	90·6	31·3	31,000
1921	H.M.S. "Renown"	750	90·2	29·8	32,000
1932	S.S. "Empress of Britain."	753	97·8	32·2	42,000
1933	H.M.S. "Eagle" ..	667	105·2	26·8	22,600

Vessels of the Orient and Peninsular and Orient Steam Navigation Companies, of over 20,000 gross tonnage, are continually passing through the canal.

The maximum speed of all ships passing through the canal is fixed at 12 km. per hour or  $6\frac{1}{2}$  knots per hour, but this is often exceeded.

### (c) *Transit of the Canal by Night*

This has been allowed since March, 1887, and the system of leading lights, light buoys and beacons is admirable. Vessels proceeding at night must be provided with an electric light, fitted in accordance with the Company's requirements. The majority of vessels obtain the light apparatus from one of the shipping agents at a uniform rate of £10 for the transit.

The introduction of the electric light has had the effect of virtually doubling the carrying capacity of the canal, the average duration of transit being 13 hours 15 minutes.

The canal lights comprise white leading lights at the ends of reaches, and at intervals on the banks, where the straight portions are long. There are coloured lights at the curves to guide vessels round them. Green lights are used on the eastern side of the channel and red lights on the western side. There are also can buoys carrying appropriate red or green reflectors, moored near the banks of the canal to help pilots to keep ships in the exact centre of the deepest part of the canal. In the straight portions, these are at intervals of about half a mile, but in the curves there is sometimes only 200 yards between them.

(d) *The Sweet Water Canal*

A fresh water canal connects the Nile at Cairo with the Suez Canal at Ismailia, the connection being effected by means of two locks at Ismailia. About 3 miles short of Ismailia, an arm of this canal, approximately 12 ft. wide, branches off and follows the line of the railway, which runs parallel to the maritime canal to Suez.

Another branch of the Sweet Water Canal runs from Ismailia to Kantara across the desert, thence parallel to the maritime canal to Port Said.

The northern portion of the Suez Canal between Ismailia and km. 64, is supplied with water from the Sweet Water Canal at Ismailia, the water being forced by steam machinery through pipes along the west bank of the canal.

## 2. Detailed Description

(a) *From abreast Port Said High Lighthouse to Kantara, 28 land miles*

For the whole of this distance, with the exception of about one-sixth of a mile, where the ground is higher, the canal runs through the bed of Lake Manzala. Lake Manzala is now, on the eastern side, a dry, flat, sandy plain.

(b) *From Kantara to the Northern end of Lake Ballah, 2½ land miles*

The canal passes through sand hills from 5-9 ft. high.

(c) *From the northern end of Lake Ballah to the leading light beyond its southern end, 8½ land miles*

The canal passes through a lagoon. The debris on either side is of fine sand.

- (d) *From the leading light southward of Lake Ballah to the northern end of Lake Timsah,  $9\frac{1}{2}$  land miles*

In this cutting, the sandhills are about 40 ft. high. For about four miles in the neighbourhood of El Gisir, the canal is cut through strata of soft lime or sandstone. The sharp turns between El Gisir and Lake Timsah are probably due to the engineers having followed the softest part of the rock. Some of these curves have been considerably reduced of late by the cutting away of the more prominent parts of the shore. Ships can pass round the curves under their own steam.

- (e) *From the northern end of Lake Timsah to the leading light at the southern end, 7 land miles*

The channel through the lake curves through an arc of about  $90^\circ$ , a ship entering the lake from the northward on a south-west-by-west course and leaving it on a south-east-by-south course.

On the north shore of the lake, from a red pillar on the beach southward of Ismailia, a fixed red light is exhibited at a height of 33 ft. The channel through the lake is well marked by the usual light buoys.

Ismailia, on Lake Timsah, the central station in the canal, is well situated for a stopping place. Off the town, there is anchorage space for a large number of vessels. There is a depth of at least 38 ft. of water in the middle of the lake, in a "gare" sufficiently large for any ship to turn round in. Vessels of 20-ft. draught can anchor close in to the pier.

Jebel Miriam, at the south end of the main lake—height above sea level, 50 ft.—has a War Memorial on its summit.

- (f) *Leading light just north of Tussum to Great Bitter Lake,  $7\frac{1}{2}$  land miles*

In this cutting, the canal is carried through strata of sandstone, except in one place, a mile southward of Serapeum, where it runs through hard gypsum rock.

- (g) *The Great Bitter Lake from north to south,  $14\frac{1}{2}$  land miles*

The excavated channel leading into the deep water is conspicuously marked on each side by light buoys and by iron beacons 15 ft. high, each having a ball 3 ft. in diameter on the top. At a distance of 4.03 miles from Reservoir Station (at the north end of the lake) stands the North Light Buoy, a white occulting light.

At the southern end of the lake is the South Light Buoy, similar to the northern one and also occulting white.

A straight run may be made between these flashing lights for a distance of 5.4 land miles, with not less than 37 ft. of water.

The excavated channel through the southern end of the lake is conspicuously marked by a light buoy showing a fixed green light on the eastern side and by a light buoy showing a fixed red light on the western side. Distance from South Light Buoy to Kabrit at the south end of the Great Bitter Lake is 4.95 miles.

The water in this part of the lake being shallower, a cutting has been made giving a depth of 39 ft.

*(h) Through the Little Bitter Lake from north to south, 8 land miles*

The channel is well marked by numerous light buoys and iron beacons on either side, about eight of the latter to a mile. They are similar to those at the northern end of the Great Bitter Lake.

*(i) South end of the Little Bitter Lake to the entrance at Port Tewfik, 16 land miles nearly*

This part is cut through hard banks with a depth of 39 ft. at low water. At Shallufa, the cutting is carried through sandstone. The debris is hard and lumpy. South of Lat. 30° 3' N. (1 mile south of Shallufa), the canal passes through sandhills. It increases in width and the debris on the bank is more than usually large. At Madama, the banks are of firm marl or soft clay. From thence to the south entrance of the canal the debris banks are sand.

The southern end of the canal curves to the south-westward and extends beyond Suez creek. After passing the town of Suez, the dock and harbour works of Port Ibrahim, the "gare" and other works at Port Tewfik on the western side, the channel continues out into the Gulf of Suez, with a depth at low tide of not less than 39 ft.

A breakwater is carried across the sea-face of the bank on the southern side of the entrance, just within the Kad-el-Marakeb Shoal.

Port Tewfik fulfils at the southern entrance to the canal the same purpose as Port Said at its northern entrance, and considerable works have been executed, though it is doubtful whether the same necessity for a large port exists at this

end of the canal as at the other. The Canal Company's office and signal station is near the middle of the "gare" of Port Tewfik.

(Further details of the Port and Harbour Lights at Port Tewfik will be found in Chapter X—Ports.)

### 3. Currents and Tides

#### (a) *Northern part of the Canal*

From November to April, the general set of the current between Port Said and the Great Bitter Lake is to the northward; from June to October, to the southward. The strength of the current depends upon any variation in the height of water in the Mediterranean, which may combine with, or change the direction of, the periodical canal current. The current lessens as the distance from the Great Bitter Lake diminishes. The maximum strength of the current is seldom more than 1 knot.

There is no perceptible tide in the canal from Port Said to and including the Bitter Lakes.

#### (b) *Southern part of the Canal*

The tidal influence in the southern portion of the canal extends from Port Tewfik to about 4 miles northward of the southern end of the Little Bitter Lake, and it is at the latter position that the separation of the salt lake water from the Red Sea water occurs.

Between Port Tewfik and the Little Bitter Lake, the tidal stream sets northward from about two hours before high water. The tidal streams attain their greatest rate, about  $1\frac{3}{4}$  knots, just south of El Kubri, about 7 miles within the southern entrance to the canal. At the Little Bitter Lake, they turn about 50 minutes later than at Port Tewfik. During strong southerly winds, the north-going stream attains a rate of  $2\frac{1}{2}$  knots at springs. The stream at the bed of the canal turns from 5–10 minutes earlier than at the surface.

The unvarying level of the water in the Little Bitter Lake causes the lateness of the commencement of the north-going stream at the south entrance. That stream cannot begin to run until the water at the entrance has risen above the level of the lakes, which takes place some two hours before high water. It then continues during the latter part of the tidal rise until such time as the water at the entrance falls below the level of the Little Bitter Lake, when the reverse movement sets in.

At springs, the tide rises 6 in. at the southern entrance to the Little Bitter Lake,  $1\frac{1}{2}$  ft. at El Kubri, 2 ft. at Madama and 7 ft. at the southern entrance.

With a strong southerly wind, the water level in Suez Bay rises from 8-9 ft., which affects the streams in the canal to some extent.

#### 4. Communications within the Suez Canal Area

##### (a) Roads

A first-class road, mainly tarmac surface, 19 ft. wide, the major portion of which runs through the Canal Company's concession, runs from Port Said via Ismailia to Suez along the western bank. The road is never more than a mile from the canal and at the northern and southern ends it is only a few miles away.

There are bridges at Port Said, Ismailia and Suez capable of taking 3-ton lorries.

A good mud road runs from Ismailia to Cairo, a first class tarmac road from Suez to Cairo, and a track fit for light M.T. leads eastwards from El Shatt over the Mitla Pass to Palestine.

The Port Said-Suez road, and those from Ismailia-Cairo and Suez-Cairo, are included in the roads scheduled to be maintained to a certain standard under the terms of the Anglo-Egyptian Treaty of Alliance (*see* Appendix 6, especially Annex to Article 6, para. 6 and para. 18, also Chapter XI—Roads).

##### (b) Rail

A railway (4 ft. 8 in. gauge) from Port Said to Suez also runs along the western bank. The main line from Cairo joins this line at Ismailia, and a subsidiary line, unfit for heavy traffic, at Suez.

On the eastern bank, the line runs from Kantara to Palestine (*see* Chapter XIII—Railways).

##### (c) Air

Landing grounds exist at Port Said, Kantara, Ismailia and Suez. The landing grounds at Port Said are small and unserviceable in wet weather.

##### (d) Cables and Land Lines

Port Said .. Three cables to Alexandria.

Suez .. .. Four cables to Port Sudan and one to Aden.

Between Port Said and Suez, two underground cables (21 core each) run along the western bank of the canal to Nefisha, and thence along the line of the railway to Suez.

Five overhead lines run from Suez to Ismailia and thence to Benha and Alexandria.

The Suez Canal Company maintain a private system of overhead line communication between Port Said and Suez. All intermediate sections are connected. (*See also Chapter XIV—Telegraphs, Telephones and Postal.*)

(e) *Wireless*

The Suez Canal Company have one station at Ismailia with a range of about 140 miles and another at Port Said for R/T work up to about 20 miles.

There is also a R.A.F. Station at Ismailia. (*See also Chapter XIV—Telegraphs, Telephones and Postal.*)

## 5. Canal Crossings

There are three main crossing places on the canal exclusive of, the harbours of Port Said and Suez (Port Tewfik) where facilities for crossing in the shape of tugs, lighters and barges are maintained, namely :—

(a) Kantara.

(b) Ferry Post (near Ismailia).

(c) El Kubri (for the only motor road to Palestine).

(a) *Kantara*

This crossing connects Egypt with Palestine by rail and gives access to Northern Sinai and Palestine by ancient "coastal" caravan route. Here there are :—

The Egyptian State Railway's Train Ferry.

Two "personnel" ferries.

*Type.*—The Train Ferry and two "personnel" ferries are mechanically operated by means of a submarine chain cable. Power is supplied on board each ferry by a Diesel oil engine.

*Capacity :—*

(i) *Train Ferry.*—

4 10-ton trucks ; or

2 flats loaded with 1 medium tank each ; or

3 flats loaded with 2 light tanks each.

Weight is the limiting factor.

The Train Ferry takes 20–25 minutes to cross the canal, including the loading and off-loading of the trucks.

(ii) *Motor "Personnel" Ferries (Dead-weight 25 tons each.)—*

2 armoured cars ; or  
2 3-ton lorries : or  
3 light cars ; or  
2 30-cwt. lorries and 1 light car ; or  
12 camels ; or  
20 horses.

Approximately 50 men can also be accommodated on a small deck at one side, the other being partially reserved for the oil engine and crew. There is direct access to each ferry by road on either bank.

The approximate time of turn-round when loaded with mechanical vehicles is 5 minutes per vehicle, provided there is no interference by passing shipping (established by test).

The engines of these ferries have on occasions broken down.

(b) *Ferry Post*

This crossing connects Egypt with Sinai and Palestine by the "central" caravan route and consists of :—

One mechanically operated "personnel" ferry, identical in type and capacity to those at Kantara.

(c) *El Kubri*

This crossing connects Egypt (Cairo–Suez road) with Sinai and Palestine by the Mitla Pass motoring road and consists of :—

One mechanically operated "personnel" ferry, identical to those at Ferry Post and Kantara (refer to the latter at (a) above for working details).

There is ample room either side of the canal at El Kubri for parking mechanical vehicles and for erecting water and petrol points. Normal hours of working 0600 hour to 1800 hour, but given notice can work all night.

*N.B.*—Prior to 1934, there were at Kantara, Ferry Post and El Kubri, hand ferries working alongside the mechanical ferries. These have been removed or are about to be removed. The approaches still remain and no doubt, if required, these ferries (dead-weight capacity 5 tons) could be brought into use again.

*Special Note regarding Tank Crossings*

The most satisfactory method of putting tanks across the canal is by the train ferry at Kantara, described above, but by making use of sheer hulks and barges, tanks could be transported at three other places.

(i) *Port Said*.—From the Abbas Hilmi Basin to a point on the inner Coal Basin on the opposite shore. (See Plan No. 3, Port Said.)

As Port Said is isolated by the canal connecting Lake Manzala with the Suez Canal, tanks must arrive in Port Said by rail.

(ii) *At Ferry Post*.—From an old concrete slipway 140 yards north of the motor ferry; tanks being railed to Ismailia, where there is a railway steam crane capable of lifting them off their trucks.

(iii) *Port Tewfik-El Shatt*.—Tanks can be railed to the Khedivial Mail Quay, Port Tewfik, which has platforms from which tanks can be run off the trucks to the quayside. The landing place on the east side is a flat topped rock about 70 yards south of the pier at El Shatt (about 2 miles up the canal from the entrance to Port Tewfik harbour).

Two sheer hulks are available at Port Said and one each at Ismailia and Port Tewfik. The distribution of barges of 200 tons varies, but normally some are available at each of the above ports. Barges of this type can carry three medium tanks per trip.

Normally, the Suez Canal Company require 48 hours notice to collect the necessary equipment at the place desired, but this could be reduced to 6 hours in emergency.

It would take approximately one hour to load and one hour to discharge each barge of three tanks. To this must be added the time of crossing, estimated at:—

Port Said	..	..	..	1 hour.
Ferry Post	..	..	..	30 minutes.
Port Tewfik-Shatt	..	..	..	2 hours.

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## CHAPTER IX

**CLIMATE**

Nature of Climate.

Mediterranean Coast, Inland, Cairo, Alexandria.

Effect of Climate on Europeans.

Effect of Climate on Egyptians.

Effect of Climate on Horses.

Climatic Influence on Facility of Movement.

Climate, Normal Values.

Prevailing Winds and Hurricanes.

Winds, Khamsin Winds, Thunder and Hail.

Earthquakes.

Magnetic Variation.

Prevailing Diseases and Precautions.

Endemic, Epidemic, Animal Diseases.

Uniform.

Insects.

Preservation of Health.

Bathing.

**1. Nature of Climate**

(a) *Egypt lies within two different climatic regions*

(i) The Mediterranean coast and the country for about 50 miles inland has a purely Mediterranean climate. The temperature throughout the year is usually mild and has a moderate range. There is a difference of 22° F. between the mean temperatures for January and August at Alexandria, and 28° F. (January and July) at Qorashiya, 50 miles inland in the centre of the Delta. The air is rather damp, the relative humidity on the coast being about 72 per cent. and showing little annual variation. Humidity at Qorashiya varies between 87 per cent. in December and 64 per cent. in June, the mean for the year being 77 per cent. The summer is almost invariably rainless; heavy rain may fall at any time between September and May, but except during the five months, November to March, there is usually very little rain. At Alexandria, the normal rainfall for January, the rainiest month, is 2 in.; for the year the amount is 8 in. It is much less (3·3 in.) at Port Said.

(ii) South of the zone mentioned above, the country lies in the desert area of North Africa and, as one travels further from the coast, the rainfall rapidly decreases and the air becomes much drier, particularly as the effect of proximity to the irrigated land of the Delta diminishes. Thus, in Cairo, the normal annual rainfall is little more than

1 in., and the relative humidity is nearly 70 per cent., while further south the rainfall is usually negligible, and the relative humidity continues to decrease, being 54 per cent. at Asyut and 36 per cent. at Aswan. The mean temperatures of the warmest months increase as one goes south, as follows:—Alexandria, 78° F. (August); Cairo, 81° F. (July), Asyut, 85° F. (July); Aswan, 91° F. (July), while the highest shade temperatures recorded since 1901, which nearly always occur in June, were 111° F., 116° F., 121° F., and 124° F., respectively.

The normal range for the year between the daily maximum and minimum temperatures is 15° F. at Alexandria, 24° F. at Cairo, 26° F. at Asyut, and 29° F. at Aswan. Local heavy fogs, due to nocturnal radiation, are frequent throughout the Delta in the winter mornings, but they are soon dispelled by the heat of the sun.

#### (b) *Climate in Cairo*

Cairo in winter, January to March, is sometimes extremely cold, at other times almost hot; there may be quite 20° F. difference in temperature between the sunny and shady sides of a street. At sundown, there is a sudden drop of temperature, which makes it essential to carry a warm coat out of doors.

Little rain falls, but there are many days of grey, clouded sky, when the sun is invisible.

In April, May and June, Khamsin winds blow more or less frequently, lasting about three days, and the temperature may rise to between 110–115° F. in the shade. Otherwise, the weather during these months is delightful.

July and August are hot, though the nights are cool.

September and October are hot, damp and unhealthy. The rising Nile backs up the sub-soil water, and causes mist to lie near the ground at night and most evil smells to arise.

November and December are the two best months of the year, though in the latter month it is often very cold.

#### (c) *Climate in Alexandria*

The climate is more equable than that of Cairo. The winter is cold, but the rainfall is not great.

In summer, the temperature is some degrees lower than that at Cairo and the air is always fresh, coming straight off the sea. In September and October, when the north breeze fails, it is very sticky and close. For the remainder of the year the climate of Alexandria is as near perfection as possible.

## 2. Effect of Climate on Europeans

Egypt is, on the whole, a healthy country and the climate may be classified as "good." Nevertheless, its effect on Europeans is enervating and tends to sap initiative and vitality. Occasional local change is desirable and a complete change at least every second year to Europe is advisable. Circumstances permitting, change to Europe every year is advocated.

The glare has an adverse effect on the eyes, so that the use of tinted glasses is advisable, particularly in the desert.

## 3. Effect of the Climate on Egyptians

Though the fellah, in good health and under supervision, is an excellent worker on tasks of a routine nature, he is generally mentally dull and dirty in his habits. This may be ascribed in part to the climate, but a large percentage of the native population suffer from Bilharzia or Hookworm, or both, and these are devitalising diseases. Fellahin, who become addicted to hashish, or excessive consumption of black tea, a habit which is rapidly spreading as the work of the Anti-Narcotics Bureau makes it more difficult to obtain the former, lose their powers of endurance and capacity for strenuous manual labour.

Bedouin are equally dirty, but on the whole quicker thinkers. Their reluctance to work is proverbial.

## 4. Effect of Climate on Horses

Imported horses take about three months to become accustomed to the climate of Egypt. During the period of acclimatisation, they are very subject to fever, colic and lameness, and special attention to exercise and diet is required.

## 5. Climatic Influences on facility of Movement

Climatic conditions during the summer months are prejudicial to long marches and rapid movement. The sandstorms of Khamsin periods may be of such intensity as to bring all military movement to a standstill, and are liable to cause respiratory diseases. During the later summer months, long marches are liable to cause "effects of heat." Ample water supplies and heat precautions are of the first importance.

### 6. Climate of Egypt—Normal Values

The altitudes of the stations and the periods from which the following figures are reckoned, are :—

Station.	Altitude, feet.	Period of Observation.	
		Temperature and Humidity.	Rainfall.
Alexandria .. ..	105	1901-30	1884-1932
Port Said .. ..	11	1901-30	1886-1932
Ismailia .. ..	33	13 years	1886-1932
Suez .. ..	11	1921-30	1921-32
Cairo (Ezbekia) ..	72	1909-30	1909-32
Aswan .. ..	327	1901-30	No gauge

### Normal Values

Month.	Station.	Temperature.			Relative Humidity, Mean of Day.	Rainfall.
		Absolute Maximum.	Absolute Minimum.	Mean of Day.		
		° F.	° F.	° F.	Per cent.	in.
January ..	Alexandria	81·0	37·9	56·3	71	2·05
	Port Said	84·2	37·4	56·5	76	0·79
	Ismailia ..	77·0	34·5	55·9	64	0·43
	Suez ..	78·8	38·3	57·0	71	0·08
	Cairo ..	85·5	30·6	53·8	76	0·24
	Aswan ..	99·0	37·4	59·2	46	—
February ..	Alexandria	91·4	37·4	57·2	70	0·91
	Port Said	91·6	36·1	57·4	76	0·47
	Ismailia ..	93·2	39·9	59·7	57	0·24
	Suez ..	80·6	39·2	58·3	67	0·08
	Cairo ..	92·1	36·7	55·8	69	0·16
	Aswan ..	102·0	35·1	62·6	41	—
March ..	Alexandria	102·9	43·7	60·3	71	0·43
	Port Said	100·4	36·9	60·6	74	0·35
	Ismailia ..	103·6	40·6	63·1	52	0·28
	Suez ..	93·6	42·8	62·6	67	0·16
	Cairo ..	100·4	37·0	61·0	66	0·20
	Aswan ..	109·8	42·8	70·2	34	—
April ..	Alexandria	108·1	49·5	64·2	71	0·12
	Port Said	104·7	48·6	65·3	73	0·24
	Ismailia ..	108·7	42·8	70·3	47	0·16
	Suez ..	108·5	48·2	69·1	65	0·08
	Cairo ..	109·0	46·0	68·0	59	0·08
	Aswan ..	115·9	48·7	79·2	29	—

Normal Values—*contd.*

Month.	Station.	Temperature.			Relative Humidity, Mean of Day.	Rainfall.
		Absolute Maximum.	Absolute Minimum.	Mean of Day.		
		° F.	° F.	° F.	Per cent.	in.
May ..	Alexandria	107.6	53.6	69.3	73	0.04
	Port Said	107.4	50.4	71.1	73	0.04
	Ismailia ..	106.9	51.8	75.6	47	0.12
	Suez ..	108.5	54.7	76.1	62	0.04
	Cairo ..	112.5	49.8	74.8	53	0.08
	Aswan ..	118.4	51.8	86.2	31	—
June ..	Alexandria	110.7	59.0	74.1	76	0.00
	Port Said	111.0	57.6	76.1	74	0.04
	Ismailia ..	113.9	57.2	79.8	50	0.00
	Suez ..	110.5	61.7	80.4	64	0.00
	Cairo ..	115.9	57.6	79.9	57	0.04
	Aswan ..	123.1	66.2	90.7	29	—
July ..	Alexandria	101.7	63.5	77.4	77	0.00
	Port Said	100.6	67.1	79.2	76	0.00
	Ismailia ..	108.0	63.7	83.5	53	0.00
	Suez ..	106.7	67.8	82.9	64	0.00
	Cairo ..	107.6	62.2	81.1	62	0.00
	Aswan ..	123.8	68.4	91.4	29	—
August ..	Alexandria	104.9	64.4	78.6	76	0.00
	Port Said	99.0	69.1	80.1	76	0.00
	Ismailia ..	106.5	64.4	82.9	55	0.00
	Suez ..	107.4	66.0	83.3	66	0.00
	Cairo ..	105.8	64.6	81.3	66	0.00
	Aswan ..	120.2	67.3	91.0	30	—
September	Alexandria	106.3	60.3	77.0	71	0.04
	Port Said	104.2	63.5	78.1	73	0.00
	Ismailia ..	106.2	55.4	79.5	58	0.00
	Suez ..	103.8	62.4	79.5	69	0.00
	Cairo ..	106.3	58.1	76.8	70	0.00
	Aswan ..	116.6	62.6	87.3	32	—
October ..	Alexandria	103.8	54.0	73.2	71	0.24
	Port Said	99.7	55.4	74.5	73	0.12
	Ismailia ..	100.8	53.6	75.4	59	0.12
	Suez ..	99.7	54.0	74.7	70	0.08
	Cairo ..	101.8	53.6	72.1	72	0.08
	Aswan ..	112.1	54.0	82.2	35	—
November	Alexandria	95.5	46.4	67.1	71	1.34
	Port Said	95.0	48.7	68.2	73	0.51
	Ismailia ..	92.5	44.6	66.6	62	0.16
	Suez ..	93.2	47.3	68.4	72	0.16
	Cairo ..	97.0	45.1	65.3	74	0.08
	Aswan ..	106.7	37.4	72.1	41	—
December..	Alexandria	85.1	37.4	59.7	71	2.28
	Port Said	82.8	32.0	59.9	76	0.67
	Ismailia ..	83.5	33.1	59.2	65	0.32
	Suez ..	83.3	38.5	60.1	70	0.12
	Cairo ..	82.9	36.0	57.0	77	0.24
	Aswan ..	98.6	36.5	62.6	45	—
Year ..	Alexandria	110.7	37.4	67.8	72	7.45
	Port Said	111.0	32.0	68.9	74	3.23
	Ismailia ..	113.9	33.1	71.0	56	1.83
	Suez ..	110.5	38.3	71.1	67	0.80
	Cairo ..	115.9	30.6	68.9	67	1.20
	Aswan ..	123.8	35.1	77.9	35	—

## 7. Prevailing Winds and Hurricanes

### (a) *Prevailing Winds*

For most of the year, the prevailing wind is northerly, but during December and January it is westerly, and during February south-westerly. Gales, from directions between south-west and north-west, due to the passage of barometric depressions along the Mediterranean, are fairly frequent during the winter, especially in February. Velocities of 60 miles an hour have been recorded several times at Alexandria, while in January, 1908, a velocity of 75 miles an hour was recorded there. The highest velocity recorded in the Cairo district is 65 miles an hour.

During the summer, from the middle of June to the end of October, there is little variation in the distribution of barometric pressure and, throughout Egypt, winds are almost invariably from the north, with a well-marked diurnal variation. At sunrise, the wind is very slight; as the temperature rises during the day, the force of the wind increases, reaching a maximum about sunset, subsequently falling rapidly to a minimum about sunrise. The mean wind velocity is highest during the early summer, averaging 13 miles an hour at Cairo (Helwan) during April, May and June, and 8 miles an hour during December and January. During the winter, particularly in January and February, barometric depressions pass along the Mediterranean and on their approach cause southerly winds in Egypt. At this time of the year, these winds are usually cold and, when the depression reaches the Syrian coast, they veer to the west and north-west, and frequently blow from this quarter for 3 or 4 days. The southerly winds preceding the depression are dry and the sky, originally clear, gradually becomes covered with cirrus cloud. With the veer of the wind to the north-west, the air becomes damper, clouds appear and frequently rain falls in the north of Egypt and less frequently as far south as Cairo or even the Faiyum.

### (b) *Khamsin Winds*

In the spring, barometric depressions advance, not only along the Mediterranean, but also from the western desert, and the south winds caused by both types are very hot and dry and are generally laden with dust, giving rise to sandstorms. These hot winds, called Khamsin winds, last as a rule two or three days and are most prevalent during March and April, three Khamsin depressions occurring in

each of these months on the average, while eleven or twelve may be experienced during the year. They do not occur during the summer, after the middle of June. It is during the passage of these depressions that the high temperatures are reached, but when the wind veers to the north-west as the depression passes, there is an abrupt fall in temperature.

(c) *Thunder and Hail*

Thunderstorms are infrequent; they occur mostly in November and December. Hail is not uncommon on the coast and occasionally falls in Cairo. The rainfall in Egypt, south of latitude 29°, is generally negligible, although heavy rainstorms occur on rare occasions.

The Table on page 219 gives the absolute maximum and minimum temperatures and the normal values of the mean-of-day temperatures and relative humidity, together with the rainfall, for each month of the year for Alexandria, Port Said, Ismailia (Canal Zone), Suez, Cairo and Aswan.

## 8. Earthquakes

Egypt is subject to earthquake shocks, but since the war of 1914-18 only one has been of sufficient severity to cause damage to property.

## 9. Magnetic Variation

In 1934, the magnetic variation in Cairo was 14' W. It is decreasing 8' each year. A compass can be used in any part of the country.

## 10. Prevalent Diseases and Precautions

Speaking generally, the European resident in Egypt is subject to most of the ordinary diseases which occur in the United Kingdom, but provided he takes reasonable precautions in his mode of living, he is no more liable to contract such diseases than in the home country.

*Endemic.*—The following are endemic in one part of the country or other:—

Bilharzia; Ankylostomiasis (Hookworm); Malaria; Sandfly Fever; Dengue; Enteric Group; Amœbic and Bacillary Dysentery; Rabies; Venereal Diseases. Ophthalmia is very common among the fellaheen, as also is Trachoma, a chronic affection of the membrane lining the eyelids.

*Epidemic.*—The following diseases become epidemic from time to time :—

Cerebro-spinal Meningitis (Spotted Fever); Diphtheria; Measles and German Measles; Chicken Pox; Small-pox; Influenza; Plague; Typhus.

## Precautions

### (a) *Endemic*

*Bilharzia.*—Very prevalent among the fellaheen, about 70 per cent. of the native population being infected. Cases rarely occur among British troops, but the disease is a serious one and the possibility of infection always remains. A brief description of the disease is given, as some knowledge of how it is spread points the way to prevention. The disease is due to the invasion of the body by a species of flat worm. The young, immature worms live in certain kinds of fresh water snails. The snails are common in the Nile and fresh water canals, and the young worms are given off in large numbers into the surrounding water. The disease, therefore, is contracted by personal contact with infected water. On gaining access to the skin or the interior of the mouth or throat, they penetrate the surface and eventually develop into adult worms in certain large veins in the body. Incubation period is from  $1\frac{1}{2}$  to 3 months and the main symptoms are the passing of blood with the urine or blood and mucous by the bowel.

In order to prevent the disease, snails must first be excluded from the water, which is then treated by storage for 48 hours, as the immature worms do not live longer in the water. Bathing or washing in any waters in infected areas must be avoided, and water supplied for drinking, bathing and ablution should be filtered and stored. When wading in such waters is necessary for military reasons, canvas waders or other waterproof protection for the legs should be provided. Snipe and duck shooting in the winter always involves wading. It is, however, fairly safe, as the worms cannot live in the cold water. Ordinary chlorination does not kill the young worms and must be used in considerably stronger concentration than usual for this purpose. They are killed immediately by a temperature of  $50^{\circ}$  C. and in 30 minutes by a 1 : 10,000 solution of creosole.

*Ankylostomiasis (Hookworm).*—Chief preventive measure consists of preventing faecal contamination of the soil, of water and of such foodstuffs as those vegetables and skinless

fruits which are usually eaten uncooked. Creosole as ordinarily employed in latrine buckets is effective and ground likely to be fouled should also be treated with creosole.

*Malaria*.—Spread by mosquitoes. The following general and individual precautions should be taken :—

(i) *General*.—Where possible, drain pools and cut away weeds and overhanging vegetation. Oil pools which it is impossible to drain. Kill mosquitoes in rooms, huts or tents daily either by swatting, fumigation or “ Flit.”

(ii) *Individual*.—Use of net at night. Wear long trousers and boots after sundown. Repellants, such as citronella oil, are sometimes useful on exposed parts. In short, avoid being bitten by mosquitoes.

*Sandfly Fever*.—Spread by the sandfly. Use of a sandfly net at night. Use of repellants, such as citronella oil. Sandflies breed in rubble, so all rubbish round sleeping quarters should be removed and burned, if possible, grass and undergrowth for at least 50 yards round cleared and burned.

*Relapsing Fever*.—Infection conveyed by lice and ticks. Rare among Europeans. Bedsteads and bedding should be inspected before retiring and a mosquito curtain used. Persons found harbouring lice must be disinfected and their clothing disinfected.

*Dengue*.—Spread by mosquitoes. Prevention as for malaria.

*Enteric Fever and Dysentery*.—These diseases may be considered together as, generally speaking, they are conveyed by the same means. Contaminated water and food supplies are the usual means of infection. All drinking water should be purified by boiling or by chemicals.

Food should be protected from contamination by flies and dust. Uncooked fruit and vegetable are always suspect and are best avoided. Fruits with thick skins, such as oranges and bananas, are, however, safe. Flies convey infection and steps should be taken to prevent their breeding. All refuse and excreta, which form suitable breeding grounds, should be destroyed daily either by burning or burying. Manure may also be rendered unsuitable for breeding by close packing and drying thoroughly in the sun. Every European should be protected against enteric fever by inoculation.

*Rabies.*—Cases of rabies among animals are common and people are frequently bitten. An anti-rabies institute exists in Cairo.

(b) *Epidemic*

*Cerebro-Spinal Meningitis.*—Generally conveyed directly from one person to another by "droplet infection," e.g. when coughing, sneezing or even talking. Ample ventilation is the most important preventive measure. The widest possible spacing in barrack rooms and institutes, etc., should be provided. Cinemas, theatres, etc., when overcrowding is apt to occur, should be avoided. Gargles, etc., are sometimes employed.

*Small-pox.*—Formerly very prevalent in Egypt, but a vigorous re-vaccination campaign in 1920–21 reduced the incidence from 7,900 cases to 77. An outbreak occurred in 1932, mainly in Alexandria, but this has been stamped out and only a few sporadic cases are now (1936) occurring. Vaccination every seven years is essential, and in the presence of an epidemic everyone should be vaccinated who had not been successfully vaccinated within 2 years.

*Influenza.*—Precautions as for cerebro-spinal fever.

*Plague.*—May almost be said to be endemic at the ports—Alexandria, Port Said and Suez—but cases are few in number. The source of infection is the rat. Fleas carry plague from rat to rat, and from rat to man, and infected fleas may live for a long time in discarded clothing, etc. Destruction of rats by trapping and poisoning, and measures against fleas, are the chief preventive measures.

*Typhus.*—Spread by lice. Chief preventive measures, therefore, are regular disinfection of clothing and avoidance of contact with natives in areas where the disease is prevalent.

(c) *Animal Diseases*

(i) *Horses, Mules and Donkeys.*—*Fever.*—The type of fever prevalent is a form of influenza, characterised by high temperature and no other symptoms. If detected and treated early, recovery is rapid. If horses are exercised after the fever has started, pneumonia and other symptoms are liable to supervene.

Hæmoglobinuria and Biliary fever are not uncommon.

*Glanders.*—Owing to the prevalence of this disease in Egypt, care must be taken to avoid contact with civilian animals, civilian stable and watering troughs.

*Bursatti or Summer Sore*.—This condition is fairly common in the hot months. All wounds should be carefully dressed and protected from flies.

(ii) *Camels*.—*Mange*.—This is very common. Treat early and isolate.

*Trypanosomiasis*.—Not uncommon. Can now be successfully treated with Naganol.

(iii) *Cattle*.—*Rinderpest*.—Not very common now, as the double inoculation is universally carried out by the Egyptian Government.

### 11. Uniform

Khaki drill and helmets are worn from April to November, and home service uniform and head-dress from November to April.

### 12. Insects of Egypt

Those which are common throughout Egypt are chiefly house flies, bed bugs, mosquitoes, sandflies, camel flies, horse flies, fleas, lice and beetles. Egypt may, in fact, be called the country of flies and, in order to secure any peace, it is necessary to have windows and doors made fly-proof. Sandflies also abound at certain seasons and the use of sandfly nets at night is advocated. If, however, there is an electric fan close by, nets are not always necessary, though fans are very frequently the cause of chills.

### 13. Preservation of Health

Assuming that regular exercise is taken, the precautions necessary to health in Egypt may be summed up in the advice "Avoid chills." This is not so easy to do as it sounds and special care is necessary at sundown. "Gippy Tummy," a mild form of dysentery, is caused by chill.

Exercise in summer months should be taken in the early morning or in the evening. In winter, exercise is possible throughout the day. The following rules apply in Egypt as in any sub-tropical country :—

(a) Avoid excess in food and drink. Alcohol is best taken only after sundown and at all times in moderation.

(b) Never drink any water which has not been treated by boiling or chemical means. Piped municipal services can, as a general rule, be taken as safe to drink, as such supplies have already been filtered and chlorinated.

(c) Be careful of uncooked fruit and vegetables. Thick-skinned fruit, such as oranges and bananas, are safe, but beware of figs, dates, etc.

(d) Protect food from contamination by flies, dust, etc.

(e) Protect yourself from the bites of mosquitoes, bed-bugs, lice and ticks.

(f) Apply iodine to all small cuts and abrasions, and seek medical advice if they do not heal in reasonable time.

#### 14. Bathing

There are excellent facilities for sea bathing on the shores of the Mediterranean at Alexandria, Port Said and El Arish, and in the Suez Canal; but great care must be taken when bathing in the sea, as the currents are most treacherous and drowning accidents are comparatively common all along the coast of Syria, Palestine and Egypt.

Bathing in the Gulf of Suez should only be indulged in in very shallow water near the shore. Sharks are not common, but have frequently been seen as far north as Port Tewfik.

Owing to the danger of infection from Bilharzia, bathing should be prohibited in all fresh water except recognised swimming pools.

All men suffering from any of the following diseases should be forbidden to bathe in any swimming bath (civil or military) :—

Diseases of the scalp or skin.

Venereal disease in an infectious stage.

Disease of the ear (or with evidence of previous ear disease).

Convalescents from enteric or dysentery, until certified free from infection.

With regard to diseases of the ear, as bathing in both swimming pools and the sea is almost certain to cause recurrence of previous ear disease, men of this category should be debarred from bathing, either in the sea or in swimming pools.

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## CHAPTER X

## PORTS

A.—ALEXANDRIA

B.—PORT SAID

C.—SUEZ

*N.B.*—All information regarding the above towns, as apart from port facilities, will be found in Chapter IV—Political Geography—Towns.

## A.—ALEXANDRIA

*(See Plan No. II.)*

General Description.

Detailed Description.

Entrance, Width, Depths, Navigation Lights, etc.

Quays and Jetties.

Regulations, Detailed Particulars, Handling of Special Cargoes.

Lifting Appliances.

Warehouses and Sheds.

Floor Space.

Water Supply.

Fuel.

Coal Wharves, Oil Tanks.

Signal Communications.

Wireless, Cables.

Shipping.

Approximate Amount and Type Daily.

Lighters.

Repairing and Shipbuilding Firms.

Government Establishments.

Commercial Establishments.

Development.

Seaplane Anchorages.

## 1. General Description

Alexandria is a commercial port, controlled by the Director-General of Ports and Lights, an Administration under the Egyptian Ministry of Communications. The post of Director-General is (1936) held by a retired British senior naval officer.

The port consists of two harbours: the *Outer*, with an area of 1,398 acres, and the *Inner or Western Harbour*, with an area of 465 acres.

## 2. Detailed Description

### *Entrance, Width, Depths, Navigation Lights, etc.*

The harbour is approached through two principal passes, the Great Pass and Straight Boghaz Pass.

The former, which is 600 ft. wide, has a minimum depth of 35 ft., and is indicated by leading marks and lights situated ashore near Mex. Heavy draught ships must exercise caution during or after a gale owing to "scend." A recommendation to dredge the Great Pass to 40 ft. has not been adopted.

The Straight Boghaz Pass has a minimum depth of 28 ft., is 300 yards wide, and is shown by leading marks only. It is not used at night.

Two undredged passes, Marakat and Corvette, provide alternative passages through the shoals for small vessels.

The entrance to the Outer Harbour, which lies between the Outer and Quarantine breakwaters, is about 450 yards wide. It is marked by flashing lights, red to the west and green to the east.

The Outer Harbour has a depth of from 31-65 ft., with mud and sand bottom. There is little or no silting.

The entrance to the Inner Harbour is about 600 yards wide and is marked on its southern side by a green flashing light. The Inner Harbour has a general depth of from 25-40 ft., but a bank with about 6-18 ft. of water extends  $3\frac{1}{2}$  cables from the north shore. The shallows and important quays are marked by appropriate light buoys and lights.

Ras el Tin Lighthouse, on the extremity of the point of that name, is a circular stone tower 180 ft. high, exhibiting a group flashing white light, visible for 20 miles.

## 3. Quays and Jetties

### *(a) Regulations, detailed Particulars*

Vessels entering the port of Alexandria for the purpose of discharging or loading, berth alongside quays when they are available. When quays are not available, discharging vessels moor to buoys in the Inner Harbour and discharge their cargo into lighters.

Vessels carrying nitrate of soda in bags discharge at the nitrate quays, or at the anchorage in the Outer Harbour, from 1st May to 1st November. From 1st November to 1st May, vessels having a part cargo of nitrates are permitted to discharge at the buoys in the Inner Harbour.

Vessels carrying explosives must anchor in the Outer Harbour and are not permitted to enter the Inner Harbour until their explosives have been discharged.

Vessels carrying petroleum and/or its products discharge their cargoes at the oil jetties or remain in the Outer Harbour until their cargoes have been discharged and the vessels made gas free.

(b) *Particulars of Quays, Alexandria Harbour*

The numbers of quays refer to plain numbers on Plan No. II—Alexandria.

No.	Length.	Depth.	Particulars.
1, 2, 3	Total length, 1,347 ft.	Ranging from 12-24 ft.	Quays 1-4 are the quays of the <i>Khedivial Mail S.S. Company</i> , and are used solely for their steamers. Construction—stone. Steamers berth outside pontoons.
4	328 ft.	8 ft.	Small boats only can berth here. A large store 50 ft. from the quay side. Stone quay.
5	1,140 ft.	8-12 ft.	<i>Old Custom Quay</i> .—Fitted with three wooden jetties for the coastwise trade—wine, fruits, etc. The general boat landing for No. 6 gate is here. Stone quay.
6	336 ft.	8 ft.	<i>Quarantine and Disinfecting Station and Passport Office</i> .— <i>Passengers land by boats here</i> .
7	504 ft.	8 ft.	Stone quay. Used for discharge from lighters of general merchandise from vessels moored outside the Basin, and transit cargo.
8	251 ft.	17 ft.	<i>Stone quay</i> .—Large masonry shed. Used for berthing coasting vessels.
9	226 ft.	17 ft.	Stone quay. Large masonry shed. Used for berthing small steamers.

No.	Length.	Depth.	Particulars.
10	426 ft.	25 ft.	Stone quay. Large masonry shed. Used for accosting steamers. Quays 8, 9, and 10 are served by one large store.
11	420 ft.	25 ft.	Stone quay. Large masonry shed. At present leased to Messrs. Lloyd Triestino Navigation Company.
12	327 ft.	25 ft.	Stone quay.—Steamships do not berth here, but lighters can discharge.
13	469 ft.	26 ft.	Stone quay. Large masonry, shed. At present leased to the Turkish Mail Line and American Export Line jointly.
14	—	—	—
15	309 ft.	18 ft.	Stone and brick quay. No storage sheds. Free for use by the general public.
20 and 21	Combined, 797 ft.	28–21 ft.	Stone quays. Vessels accost these quays outside floating pontoons. No storage sheds. These quays are at present leased to the "Fabre Line" and the "Roumanian State Line."
22	380 ft.	16 ft.	Stone quays. Vessels can only berth here stern on. There are iron storage sheds across the road, and lighters can discharge here.
<p><i>Central Quays.</i>—The Central Quay is divided into two parts, by the roadway from No. 14 gate. The northern part includes Quays Nos. 23, 24 and 25, and the southern part Nos. 26, 27 and 28. Many of the principal offices are situated on and about the No. 14 gate roadway, viz., Central Customs Administration, bonded warehouses, tobacco warehouses, etc., etc.</p>			
23	340 ft.	25 ft.	Stone quays. Steamers berth outside floating pontoons. There are several storage sheds on these quays. Nos. 23, 24 and 25 are divided into two equal parts, of which one is leased to Messrs. Lloyd Triestino Navigation Company and one to Messrs. Furness (Egypt), Ltd. (Prince Line).
24	340 ft.	25 ft.	
25	340 ft.	25 ft.	

No.	Length.	Depth.	Particulars.
26	520 ft.	26 ft.	Stone quay. Steamers berth outside floating pontoons. Large storage sheds. This quay is at present leased to the Messageries Maritimes Line of steamers.
27	383 ft.	24 ft.	Stone quay, with a permanent wooden extension, against which vessels accost direct. Large storage sheds. At present leased to the Papayanni Line of steamers.
28	512 ft.	24 ft.	Stone quay, with large wooden fenders, against which vessels accost direct. Large storage sheds. At present leased to Messrs. Ellerman Line of steamships.
29	351 ft.	25 ft.	Stone quay, but steamers berth outside floating pontoons. Storage shed.
31	348 ft.	24 ft.	Stone quay, with concrete extension. Vessels accost direct.
32	666 ft.	9-12 ft.	Low stone quay. There are two wooden jetties, each 100 ft. long at right angles to the quay, used for berthing small craft. Part of the quay surface is occupied by the fire brigade station, Customs police and Ports and Lights Quay office.
33	803 ft.	9-15 ft.	Cannot be used by steamers, but is reserved for Nile craft using the Mahmoudieh Canal.
34	400 ft.	17-21 ft.	Stone quay. Reserved for loading vessels. Accost direct.
35 36	Combined length, 1,148 ft.	26-28 ft.	Stone quay. Large double-storey sheds, but the quays are at present practically reserved for loading. Vessels accost direct.
38	384 ft.	28 ft.	Stone quay. No storage shed. Reserved for loading. Vessels accost direct.

No.	Length.	Depth.	Particulars.
39 40 41	Combined length, 1,433 ft.	27-30 ft.	Stone quay. Large double-storey sheds on quays Nos. 39 and 40. These are discharging quays. No. 41 reserved for loading. On Nos. 39 and 40 are eight travelling electric cranes. (See 4, Lifting appliances.) Vessels accost direct.
42 43	Combined length, 925 ft.	26 ft.	Stone quays, but vessels berth outside floating pontoons. Reserved for discharging general cargo. Large storage shed.
44	492 ft.	23 ft.	Stone quay. Large storage shed. Vessels accost direct. At present leased to the Deutsch Levant Line of steamers.
45	577 ft.	26 ft.	Stone quay. No storage sheds. Reserved for loading. Vessels berth outside floating pontoons.
46	460 ft.	26 ft.	Stone quay, with a projecting wooden structure 27 ft. wide. This enables vessels to load without floating pontoons. Storage sheds. At present leased to Westcott and Lawrence, and Wilson Lines of steamships.
47	460 ft.	26 ft.	Stone quay, but similar structure to No. 46. Storage sheds. Available to general public.
48	204 ft.	24 ft.	Stone quay, but vessels berth outside pontoons. Storage shed, but this quay is at present reserved for loading.
49	632 ft.	26 ft.	Stone quay, with permanent structure attached, used in conjunction with pontoons. Reserved for use of the Egyptian State Railways Administration.
50 51 52 53 54	Total length, 2,100 ft.	25-28 ft.	Coal quays.—Stone quays, but vessels berth outside pontoons. Quays Nos. 50, 51, 52 and 53 are available to the general public. Quay No. 54 is reserved for the Egyptian State Railways. This quay is fitted with overhead mechanical transporters for quick discharge of Government steamers.

No.	Length.	Depth.	Particulars.
55	Total	27 ft.	Stone quay. Vessels accost
56	length,		direct.
	857 ft.		
57	430 ft.	27 ft.	Stone quay. Vessels accost
			direct.
58	440 ft.	27 ft.	Stone quay. Vessels accost
			direct.
59	425 ft.	27 ft.	Stone quay. Vessels accost
			direct.
60	725 ft.	27 ft.	Stone quay. Vessels accost
			direct. This finishes the coal
			quays. There is a huge quay
			surface used for the storage of
			coal at this spot.
64	—	—	Small lighter port, depth of 8 ft.
			for lighters and boats to dis-
			charge bricks, oil and cement.
65	—	—	Stone quay. Depth, 8 ft. Used
			for discharging small sailing
			craft and lighters.
66	<i>Mantacheff Jetty</i> ..		Stone jetty, but vessels berth
			outside pontoons, to discharge
			petroleum, etc. Depth, 25 ft.
67	<i>Worms Jetty</i> ..		An iron piled jetty with wooden
			decking. Vessels moor astern
			on at the end of this jetty to
			buoys. Depth, 28 ft.
68	—	—	Small lighter harbour, 236 ft. by
			114 ft. Depth, 9 ft.
69	—	—	Small lighter harbour, 254 ft. by
			131 ft. Depth, 9 ft.
	<i>Vacuum Oil Jetty</i> ..		An iron jetty with stone head.
			Vessels moor stern on. Depth,
			27 ft.
70	—	—	A stone jetty where oilers moor
			stern on. Depth of water,
			27 ft.

*Fuel Oil* is obtainable from jetties direct, or delivery by barge, in any quantities by arrangement.

*Timber Quays.*—Nos. 71–81. The wood quays consist of three moles, 394 ft. long, 262 ft. broad, having a water surface between them of 180 ft. Depth alongside, 26 ft. Nos. 82–84. A small port fitted with very low quays, for the handling of rafted timber. Depth, from 9–12 ft. Used for lighters and small craft.

*Cattle Quays.*—Nos. 85 and 86. Reserved for the discharge of cattle and live animals. Stone quay with wooden fenders. Length, 400 ft. Depth, 24 ft.

### (c) *Handling of Special Cargoes*

In all cases, except where particularly specified, steamers discharge and load their own cargoes by means of their own winches and derricks.

*Cotton* is loaded by steamers' winches and booms.

*Cotton Seed* is carried on board in sacks by native porters on specially constructed and privately-owned portable gangways. Sacks are opened and teemed at the hatches.

*Cattle* must be walked down gangways, or discharged by means of properly constructed ropes and canvas belts fitted with spreaders. Sheep must be unloaded in boxes.

*Nitrates*.—Vessels discharge nitrates into lighters while moored stern on to the nitrate quays. There are three berths with ample depth of water at Mex Shore.

## 4. Lifting Appliances

There are two floating sheers belonging to the Ports and Lights Administration, numbered 1 and 2. Both are at the Ports and Lights Floating Plant Quay and have steam motive power; neither are self-propelling.

No. 1 (adjustable) has a capacity of 40 tons at radius of 18 ft., 20 tons at 45 ft. radius, and its radius from float is 18-45 ft. Its height of lift is 62 ft. with legs out and 82 ft. with legs in.

No. 2 (fixed) has a capacity of 8 tons, with radius from float of nil to 20 ft.; height of lift is 45 ft. with legs out.

There are eight travelling electric cranes on rails on quays Nos. 39 and 40. Each has a radius of 40 ft., but the cranes have adjustable jibs. Two of the cranes have 5 ton capacity and six have 2½ tons.

The electricity for the cranes is supplied from the Egyptian State Railways Power Plant at Gabbary.

## 5. Warehouses and Sheds

### *Floor Space*

The covered space available, excluding office space, is—

	Sq. Yards.	Location.
(a) Customs Hangars ..	150,695	Near Central
(b) Customs Tobacco Warehouse .. ..	62,194	Quays: eg. Nos. 23-28.
(c) Egyptian Bonded Warehouses Co., Ltd. ..	66,978	(See para. 3 (b) above.)
(d) Magasins Egyptian Regime Bond Co. .. ..	10,764	
(e) Quais des Nitrates ..	7,894	

Further, the Egyptian Government occupy the large (timber) Stagni sheds of 143,524 sq. yards, opposite the timber quays. The sheds are just outside the Customs boundary, but are in easy reach of the quay side and possess several railway sidings.

## 6. Water Supply

Water is drawn from the town supply, a description of which is given in the description of Alexandria Town in Chapter IV—Political Geography.

## 7. Fuel

### *Stocks, Coal Wharves, Oil Tanks, Facilities for Handling*

There is storage for 20,500 tons of oil fuel and substantial stocks of coal.

A large supply of Welsh and North Country coal is usually in stock. There are usually 10,000 tons of fuel oil in stock.

## 8. Signal Communications. (See Chapter XIV.)

There is no civil wireless station in Alexandria, the Marconi Station being in Cairo. The Government Transmitting Wireless Station is at Ras el Tin Point, a few yards to the north of the Yacht Club and Government Receiving Station is on the railway station.

The Ras el Tin Station is vulnerable to attack.

## Cable Communications

The Eastern Telegraph Company cables land at what is known as Siloila Fort, at the point where the eastern arm of the breakwater of the eastern harbour leaves the shore.

There are two small huts on the shore into which the cables run, and from where they follow the inner of the two esplanade roads westwards, under the pavement, up to the Eastern Telegraph Company's building.

There are ten cables—five to Malta, three to Port Said, one to Larnaca and one to the south-eastern point of Crete-Sithia.

## 9. Shipping

### *(a) Approximate Amount and Type of Shipping using the Port daily*

Mail Vessels	..	..	..	3
Cargo Boats	..	..	..	37
Sailing Craft	Summer	..	..	13
	Winter	..	..	3

*(b) Lighters*

The port of Alexandria is well supplied with lighters which are privately owned. These are hired by private agreement between shipping agents and lighter owners. Lighters are both open and decked, but hatchways are not used. Method of protection from weather—tarpaulins.

**10. Repairing and Shipbuilding Firms***Type of Work undertaken—Government Establishments*

There are no naval dockyards in the true sense of the word. The Arsenal at Alexandria consists of a fairly well equipped workshop, containing a machine and fitting shop combined, foundry, boilermaker's shop, blacksmith's shop, carpenter's shop, pattern shop, tinsmith's shop, drawing office and four slipways.

This shop did a great deal of useful work for the Navy during the War. The machine shop has a large lathe with face plate 5 ft. diameter, length of bed plate between centres 20 ft., another with same size face plate with a short bed plate, and about ten other lathes of smaller and varying sizes.

The largest drilling machine is a Radial one of 6 ft. 6 in. There are about six others of smaller sizes.

The largest planing machine has a travelling table 13 ft. 6 in. long with a breadth of 3 ft. 9 in., height between table and cutting tool is 3 ft. There are two other smaller shaping machines, with two milling machines.

The foundry is capable of making castings up to 4 tons.

The blacksmith's shop has about 11 forges and two pneumatic hammers.

The carpenter's shop is used for building launches up to about 50 ft. in length, and various kinds and sizes of boats, quay pontoons, etc.

No. 1 slipway has a capacity of 400 tons displacement, with a cradle 120 ft. long and 13 ft. wide.

No. 2 slipway has a capacity of 70 tons displacement.

No. 3 slipway has a capacity of 200 tons displacement.

No. 4 slipway has a capacity of 100 tons displacement.

The haulage power of all these slips is steam at present but will, within the next year or so, be converted to electricity.

Alexandria has a dry dock, the dimensions of which are as follows :—

Interior length 520 ft., length of blocks 475 ft., breadth at top 64 ft., at bottom 59 ft., depth of water on sill 21 ft. 6 in.

This dock can be pumped out in about five hours; the present pumps are steam-driven centrifugal pumps. It is proposed to convert these this year to electrically-driven centrifugal pumps to empty the dock in about three hours.

#### *Commercial Establishments*

There are only three commercial establishments worthy of mention. They are the Khedivial Mail Steamship and Graving Dock Company Limited, the Alexandria Engineering Works, both British owned, and Messrs. E. and C. Zacharis Brothers, an Hellenic firm.

(i) The Khedivial Mail workshops are at Ras el Tin, on the waterside. They have three mooring berths in the Arsenal Basin. They have an experienced staff and undertake every sort of marine and engineering repair work, and can also build tugs, fire-floats, small coasting vessels, oil fuel reservoirs, etc.

The machine shop has quite adequate lathes for propeller shafting, etc., and is served by an overhead crane with a lifting capacity of 20 tons.

The foundry can cast up to 8–10 tons weight in cast iron and 1 ton in brass.

The boiler shops too are full of equipment, and the plating shops can deal with under water repairs.

The company also has slipways for small craft.

(ii) The Alexandria Engineering Works are in the Bab-el-Karasta Street, near Customs Gate No. 14; they have a railway siding.

Their foundry is served by ten and five tons travelling cranes. Casting up to 5 tons in weight can be produced.

In their old machine shop there is a 10-ton travelling crane and in the new machine shop a 15-ton travelling crane, 41 ft. span and 26 ft. high. The largest lathe is a triple-gearred machine which will take 35 ft. between centres, and is suitable for the heaviest marine shafts.

All the other usual sections of machine workshops exist including an electric welding department. The motive power of this machinery is a 350-h.p. internal combustion engine.

(iii) *E. & C. Zachari Brothers.*—This firm describes their works as follows:—

Civil and architectural constructions, comprising bridges, tanks, irrigation work, etc.

Shipbuilding and marine engineering, comprising all normal branches.

Mechanical engineering, comprising repair to motive power, etc.

Welding department, comprising soldering, electric and oxy-acetylene weldings.

The weight of the largest casting made up to date is 4 tons.

Their principal machines are—

Face lathe with 3.99 m. face plate and 6.00 m. length between centres.

Steam hammer with  $9\frac{1}{2}$  in. diameter of cylinder, 3 ft. stroke and 10 cwt. of hammer.

Rolling machine 10 in. long, with 14 in. diameter of rolls for bending up to 1 in. thick plates.

Air compressors used for riveting, caulking or fullering.

## 11. Development

*Details of work planned, or in hand*

The only "improvement" of recent years is the new quay at Ras el Tin for the royal yacht to lie alongside.

For seven years, vast projects for a petroleum basin and nitrate quays have been studied—but so far without results.

## 12. Seaplane Anchorages

Alexandria Harbour is a suitable anchorage for seaplanes and it is used as such by the flying boats of Imperial Airways on the Brindisi sector of their service.

## B. PORT SAID

(See Plan No. III.)

General Description.

Prevailing Winds.

Detailed Description.

Entrances, Widths, Depths, Navigation Lights, etc.

Quays and Jetties.

Detailed Particulars.

Lifting Appliances.

Warehouses and Sheds.

Floor Space.

Water Supply.

Fuel.

Oil Tanks, Coal Wharves, Facilities for Handling.

Signal Communications.

Shipping.

Amount and Type normally using the Port.

Repairing and Ship Building Firms.

Seaplane Anchorages.

### 1. General Description

Port Said is a commercial port at the Mediterranean entrance of the Suez Canal. The Suez Canal Company maintains and develops it, under reservation of the sovereign rights of the Egyptian Government over its waters.

The prevailing winds are north and north-west. The east wind is the most unfavourable for the harbour. South and south-west winds, being off-shore, produce no sea.

### 2. Detailed Description

*Entrances, Widths, Depths, Navigation Lights, etc.*

Port Said has an excellent artificial harbour formed by two concrete breakwaters extending from the sandy, gently shelving shore. The western breakwater is nearly  $3\frac{1}{2}$  miles long and the eastern one about  $1\frac{1}{2}$  miles. A good, straight channel, about 459 ft. wide at its narrowest part, leads from the roadstead to the harbour and through the Inner Harbour or Ismail Basin. The depth of the channel is 41 ft. at the Lighthouse (minimum depth 37 ft.). Ships drawing up to  $34\frac{1}{2}$  ft. can enter and moor at Berth 8A in the outer harbour (or less suitably at Berth 3 black), and those with a maximum draught can go through the canal. Both harbour basins and canal channels are frequently dredged to maintain and enlarge them, but the work is not extended to those areas of the harbour outside basins and channels.

The harbour is approached through a dredged channel, about 3 miles long, protected on its western side by a breakwater. The channel is marked by light-buoys showing fixed lights, red on the eastern side and green on the western side. Leading marks situated near El Raswa oiling depôt, south of the town, also indicate the channel.

Port Said High Lighthouse, on the water front of the town, is an octagonal stone tower 193 ft. high and painted in black and white vertical stripes on the seaward side, constituting a good beacon. It exhibits a white flashing light visible 20 miles, between the bearings of  $103^{\circ}$  through South to  $305^{\circ}$ .

### 3. Quays and Jetties

#### *Type of Construction, Widths, Lengths, Depths of Water*

Port Said Harbour comprises the following basins, of which the principal have broad, concrete-faced quays :—

(a) *Outer Port Basin*.—A new basin, capable of taking the largest ships which can enter the port, has been completed in the eastern part and at the entrance of the port.

A jetty,  $498\frac{1}{2}$  yards long, commencing from the eastern breakwater, has been constructed perpendicular to the canal axis to bound this basin towards the north.

(b) *Inner Harbour or Ismail Basin*.—This basin is sub-divided on the western side into three smaller ones, all opening into the harbour; they are named respectively, Commercial, Arsenal and Sherif.

The Commercial Basin has a depth which varies from  $21\frac{1}{2}$  ft. at the entrance to  $11\frac{1}{2}$  ft. at a distance of 22 yards from the western quay.

The Arsenal Basin has a depth of 31 ft. from the entrance to a distance of 66 yards from the western quay, after which the depth is 18 ft.

The Sherif Basin has a depth of 36 to 40 ft.

(c) *The Africa or Abbas Basin*.—This basin is on the western side of the canal entrance and is chiefly for the use of vessels staying some time in the port, by which the harbour is relieved from being inconveniently crowded.

There is a general depth of 37–41 ft. in this basin.

(d) *Asia Collier Basin or Hussein Basin*.—A large basin has been dredged on the east side for colliers and is intended to relieve Africa or Abbas Basin being used for import and export trade. The depth of water varies from 33–37 ft.

(e) *Special Area for Petroleum Vessels*.—On the east bank, a small basin has been constructed for the use of vessels with petroleum; the entrance is protected by floating booms.

There is a general depth of 34–37 ft. in this basin.

On the Asiatic and African sides of the port, there are, opposite the oiling depôts, mooring posts for ships desiring to load or off-load oil fuel.

There is also a basin for dredgers, etc., of the Suez Canal Company on the eastern side of the canal entrance to the north end of Port Fuad.

#### 4. Lifting Appliances

The Suez Canal Company workshops are on the Asiatic side of the canal entrance (Port Fuad). The following lifting appliances exist:—one each 2 and 5-ton electric cranes, fixed; one 150-ton floating crane on lighter; three 60-ton; one each 40, 25, 10 and 8-ton sheers; one self-propelling crane, floating, of 12 tons.

#### 5. Warehouses and Sheds

##### *Floor Space*

The stores of the Customs Administration and the Egyptian Bonded Warehouses Company, Ltd., respectively, are as follows:—

##### *(a) Customs.*

###### *Store A.*

Total area, 4,306 sq. yards.

One-third of this store is composed of two floors, each 1,425 sq. yards, and is used for tobacco.

###### *Store B.*

Total area, 4,306 sq. yards.

Of this, 1,722 sq. yards are rented to the Egyptian Bonded Warehouses Company.

###### *Hangar for Fruits.*

35 by 13 yards = 455 sq. yards.

###### *Hangar for Exports.*

21½ by 13 yards = 279½ sq. yards.

##### *(b) Egyptian Bonded Warehouses.*

###### *Customs Zone.*

One shed of 1,379 sq. yards for import goods.

One shed of 3,229 sq. yards for import goods.

###### *Free Zone.*

One shed of 4,306 sq. yards for goods in transit.

###### *Inflammable Zone (Raswa).*

One shed of 1,118 sq. yards for inflammable goods in importation.

One shed of 1,117 sq. yards for inflammable goods in transit.

###### *Outside Customs Zone.*

One shed of 910 sq. yards for cleared goods.

## 6. Water Supply

The water supply of Port Said is conducted by the Sweet Water Canal to the filtering works of the Suez Canal Company at El Raswa. (*See Chapter IV—Political Geography—Towns—Port Said.*)

## 7. Fuel

*Stocks, Oil Tanks, Coal Wharves, facilities for handling*

Storage tanks for furnace fuel and Diesel oil for bunkering exist at El Raswa and on the opposite bank as follows :—

	<i>Furnace Fuel.</i>	<i>Diesel Oil.</i>
Shell Co. . . . .	1 for 12,000 tons. 1 for 8,000 " 1 for 4,000 "	1 for 4,000 tons.
Anglo-Persian Oil Co. . . . .	2 for 8,000 "	1 for 5,000 " 1 for 500 "
Admiralty . . . . .	2 for 8,000 "	
Standard Oil Co. . . . .	1 for 9,000 " 2 for 5,000 "	1 for 500 " 1 for 1,100 " (Gas oil).
Cory Brothers . . . . .	1 for 4,000 " 1 for 5,000 "	1 for 8,000 " (leased to Standard Oil Company).

There are extensive coal yards on the eastern side and the adjacent islands, and coal can be obtained in any quantity and placed on board expeditiously from lighters by coolies. There is no coal wharf. Coaling is but rarely impeded by the weather.

## 8. Signal Communications

(*See Chapter XIV.*)

The only cables are those of the Eastern Telegraph Company—three from Alexandria—which come ashore on the beach about  $1\frac{1}{2}$  miles west of the western breakwater. They are connected direct with land lines to Suez.

## 9. Shipping

*Amount and Type of Shipping normally using the Port—Lighters, Tugs, etc.*

The bulk of the shipping in port consists of passenger ships and freight steamers of lines regularly transiting the Suez Canal in either direction, and the normal stay of

which in Port Said is only a few hours. They vary from liners of 20,000 tons and over to small freight steamers, but the average size is fairly large and may be estimated at round about 6,000 tons. The number of canal transits is seven to eight each way in the 24 hours, 50 per cent. of the shipping being British.

The only ships which stay any length of time at Port Said are the colliers.

Ships moor to buoys in the canal and basins, sometimes supplemented by hawsers to bollards; landing is effected from the principal berths on the west side of the canal by pontoon, and otherwise by boat.

In 1934, 7,219 ships called at Port Said, of which 683 were sailing vessels and 72 ships of war.

Port craft registered at Port Said consisted of the following :—

Suez Canal Company's tugs, launches and pilot boats .. .. .	30
Government launches (Police, Customs, etc.) ..	19
Public launches .. .. .	60
Private launches .. .. .	127
Tugs .. .. .	67
Lighters .. .. .	613
Water barges .. .. .	29
Oil tankers .. .. .	6

#### 10. Repairing and Shipbuilding Firms—Type of Work undertaken

The chief commercial establishments are the workshops of the Suez Canal Company in Port Fuad.

Castings up to 12 tons maximum in iron and 11 cwt. in brass can be made.

Cylinders turned up to 48 in. inside diameter.

Outside turning (short lengths) up to 15 ft. diameter.

Shafts turned up to 26 ft.

Threads (on shafts), 15 ft. maximum.

There is a floating dock, moored in the Canal Company's basin: 293 ft. overall length, 60 ft. wide, with a depth of 18 ft. on blocks, lifting power, 3,000 metric tons.

There are also :—

Two rolling slips which can receive vessels up to 1,000 tons.

Two sliding slips for vessels up to 200 tons.

Two sliding slips for vessels up to 400 tons.

Repairs can be executed by the Suez Canal Company, who possess two overhead cranes of 45 tons each and a large smithy with steam hammers of 3 tons and  $1\frac{1}{2}$  tons.

They also have oxy-acetylene welding and cutting and electric arc-welding plant.

The men employed are Egyptians for unskilled labour, and Greeks, Italian and Maltese for the artisans and foremen.

Minor repairs can also be undertaken by the Port Said Engineering Works (workshop on Island No. 2) and by Messrs. L. Savon et Cie.

There are no arsenals, or commercial establishments, which could be usefully and readily converted to war purposes, save possibly the Suez Canal Company's workshops in Port Fuad, already mentioned.

### 11. Seaplane Anchorages

The harbour and basins of Port Said are well suited for seaplane anchorages.

### C.—SUEZ

(See Plan No. IV.)

General Description.

Detailed Description.

Entrance, Width, Depth, Navigation Lights, etc.

Quays and Jetties.

Detailed Particulars.

Cranage.

Warehouses and Sheds.

Water Supply.

Fuel.

Coal Stocks, Oil Storage.

Signal Communications.

Shipping.

Repairing and Shipbuilding Firms.

Development.

Seaplane Anchorages.

### 1. General Description

The port and town together are known as Suez, though the port itself lies at Port Tewfik, a spit of land connected to the mainland by a causeway (railway and road) about  $1\frac{1}{2}$  miles in length. The port is commercial and is controlled by the Egyptian Government, through the Ports and Lights Administration.

## 2. Detailed Description

### *Entrance, Width, Depths, Navigation Lights, etc.*

The Suez Canal and the docks at Port Tewfik are approached by two separate channels. A third channel leads to the entrance of the new harbour between the western and southern breakwaters. Occasional dredging is necessary to maintain the depth of these channels which could easily be blocked or mined. The entrance between the two breakwater heads at the docks is 328 ft. wide, with a depth of 27 ft. at low water. The new harbour is enclosed on the southern side by a breakwater 3,335 ft. long, and on the western side by a breakwater of three branches, 2,247 ft., 3,124 ft. and 1,495 ft. long respectively. The entrance between the two breakwaters is 1,460 ft. wide, with a depth of 30 ft. at low water. The draught of the largest vessel which can enter the canal is 33 ft.

The Suez Canal is approached through a dredged channel marked by light buoys. Those on the west side of the channel show red lights, and those on the east green.

On each side of the entrance to Port Ibrahim are fixed lights—red on the north side and green on the south. The seaward end of the quay separating the North and South basins is marked by a fixed white light.

The channel leading to the new port is marked on each side by appropriate buoys and the entrance by flashing lights, green on the south side and red on the north. Leading marks and fixed red lights situated ashore on the Anglo-Persian Oil Company's property indicate the buoyed channel to that company's petroleum basin.

## 3. Quays and Jetties

The dock has a water area of 99 acres and is divided into two basins by a centre quay. The North Basin has on the north a stone quay 2,415 ft. long with a depth of 26 ft. A line of railway runs the whole length of this and the centre quay. On the north side of the centre quay there is a wooden pilgrim's pier, 261 ft. long, with a depth of 23 ft. The Khedivial Company's stone quay is on the southern side of the centre quay, with a length of 457 ft. and a depth of 25 ft. On the southern side of the South Basin there is a stone quay 2,415 ft long with a depth of 22 ft.

North of the existing docks, a new harbour has been constructed, comprising a Petroleum Basin and a Cattle Jetty. The petroleum basin has a water surface of 28.5 acres, with stone quays 1,608 ft. long on the north, 1,375 ft. long on the east and 2,247 ft. long on the west sides. The

entrance to the basin is 328 ft. wide, with a depth of 30 ft. at low water. The basin has four concrete jetties for the use of petroleum ships, and two concrete jetties have been constructed on the second branch of the western breakwater for bunkering purposes.

On the east side of the petroleum basin there is a concrete jetty for the use of cattle steamers, with a depth of 14 ft. at low water.

On the canal front at Port Tewfik, there are several wooden piers for the use of launches and small craft.

#### 4. Cranage

There are no cranes or lifting appliances on the quays. In the docks there is a floating crane of 15 tons capacity, belonging to the Ports and Lights Administration, and in the basin at the entrance to Suez Creek, the Suez Canal Company has a floating crane of 40 tons capacity. There is also a motor fire float with fire pumps fitted with salvage suction for de-watering vessels, and a Danish salvage steamer equipped with all necessary appliances.

#### 5. Warehouses and Sheds

The floor space of the warehouses is as follows:—

##### *Suez.*

Gianneli Stores .. ..	478 square yards.
Gunny's Railway Shed ..	2,810 square yards.
Church Ground .. ..	2,142 square yards.

##### *Port Tewfik.*

For ordinary cargo .. ..	1,808 square yards.
For inflammable stores ..	245 square yards.
Egyptian Bonded Warehouses, Ltd. .. ..	817 square yards.

#### 6. Water Supply

Suez is supplied by the Sweet Water Canal. The waterworks are situated on the north-east of Suez town on the banks of the Sweet Water Canal. For details, see Chapter IV—Political Geography—Towns, Suez.

#### 7. Fuel

##### *Stocks, Coal Wharves, Oil Tanks, facilities for handling*

Coal is stocked in considerable quantities on the northern quay at Port Tewfik and in the Canal Company's enclosures at the entrance to Suez Creek.

There is tank storage for 119,000 tons of petroleum at the refinery of the Anglo-Egyptian Oilfields, west of Suez town.

#### 8. Signal Communications (*see* Chapter XIV)

The Eastern Telegraph Company's cable to Port Sudan enters the sea at a point 800 yards west of the Refinery, about  $2\frac{1}{2}$  miles west of Suez town.

The landing place of the Egyptian State Telegraph cable (communicating with the Sinai Peninsula) is situated about  $\frac{3}{4}$  mile within the entrance to Suez Creek.

#### 9. Shipping

All shipping passing through the canal usually anchors in the roads at the entrance to the canal. The only ships that normally enter the harbours are the oil tankers and ships of the Khedivial Mail Steamship Company and Italian lines, of 1,500 to 2,500 tons, engaged in the Red Sea trade.

#### 10. Repairing and Shipbuilding Firms

There is a graving dock belonging to the Khedivial Mail Steamship Company at the north-east end of the South Basin. Ships up to about 490 ft. long and 73 ft. 6 in. beam and 24 ft. draught can be docked. Minor repairs can be effected by the dock company, who also own a boat-slip.

#### 11. Developments

##### *Details of work Planned, or in hand*

Plans have been laid for extensive improvements to the new port, but at present (1937), work is held up owing to the lack of funds. It is improbable that work will be started within the next few years, as at present the trade of the port does not warrant the expenditure.

#### 12. Seaplane Anchorages

The Petroleum Basin is a suitable anchorage for seaplanes and flying boats. In fine weather they could also alight opposite the Oil Refinery. There would be no difficulty in beaching either type on the northern shore of the new port.

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## CHAPTER XI

## ROADS

(Reference Map No. 6.)

## General.

Projected Road Development agreed to in Anglo-Egyptian Treaty of 1936.

## Characteristics of Egyptian Roads.

Cairo and Alexandria. Delta and Nile Valley. Effect of wet weather and watering.

## Authority Responsible for Upkeep.

## Bridges and Culverts.

## Delta Roads and Military Movements.

General, Parking Places, Villages and Towns, Traffic Road Signs, Police, Footpaths.

## Details of Principal Roads.

Cairo—Alexandria, Port Said, Suez, Faiyum,  
Alexandria—Ismailia, Ismailia—Suez, Upper  
Egypt, Faiyum.

## Desert Tracks.

## 1. General

Cairo is the hub of the road system of Egypt, which as far south as Wasta is shown on Map No. 6. Apart from the roads of Faiyum Province, the trans-desert roads from Cairo to Suez, the Faiyum and Alexandria, the road from Port Said to Suez and that from Tel el Kebir to Ismailia, there are no roads in Egypt except in the Valley and Delta of the Nile.

The principal desert tracks and roads south of Wasta are shown on Map No. 1.

The principle on which roads are normally classified for Military Reports is as follows :—

*By letters as regards width, i.e. :—*

A roads.—Those capable of taking two streams of traffic.

B roads.—Those capable of taking one stream of traffic, but on which individual and occasional vehicles can pass the stream.

C roads.—Those capable of taking one stream of traffic and on which passing is impossible, except at certain definite passing places.

*And by figures as regards surface and foundation, viz. :—*

1. Roads capable of taking heavy mechanical transport, *i.e.* 3-ton lorries, heavy guns, etc.
2. Roads only capable of taking light mechanical transport up to 1-ton lorries.
3. Roads only capable of taking horse transport.

Thus a road capable of taking two streams of heavy transport is described as A1. In addition, where the surface of a road deteriorates in the wet season, its classification at that period is shown in brackets. For example, an A2 road which becomes an A3 road in wet weather is shown as A2 (A3).

As, however, the roads of the Nile Valley and Delta are nearly in every case mud roads (*see* para. 3), in width varying from types A to B; as regards surface, capable of carrying light M.T. in dry weather, but after rain becoming impassable to motor traffic; in the interest of simplicity, their nomenclature has been omitted from Map No. 6 and it may be assumed that all roads shown fall in the category A-B2 (A-B3), unless marked otherwise. Again for reason of simplicity, A1 roads are indicated by a thicker red line instead of by letter and number. Roads which are due to be constructed under the terms of the Anglo-Egyptian Treaty of Alliance of 1936 are shown by a green line.

There are also numerous bye-roads in the Delta area, which it is not possible to show on a small scale map.

## 2. Projected Road Developments agreed to in Anglo-Egyptian Treaty of Alliance, 1936

Under para. 6 of Annex to Article 8, the Egyptian Government "in order to bring the means of communication in Egypt up to modern strategic requirements", agree to construct the following roads with the necessary bridges.

(a) Ismailia—Alexandria, *via* Tel el Kebir, Zagazig, Zifta, Tanta, Kafr el Zaiyat, Damanhur.

(b) Ismailia—Cairo, *via* Tel el Kebir and thence continuing along the Sweet Water Canal to Heliopolis.

(c) Port Said—Ismailia—Suez.

(d) A link between the south end of the Great Bitter Lake and the Cairo—Suez road about 15 miles west of Suez

This paragraph goes on to say :—

In order to bring them up to the general standard of good class roads for general traffic, these roads will be 20 ft. wide, have bye-passes round villages, etc., and be made of such material as to be permanently utilizable for military purposes, and will be constructed in the above order of importance. They will comply with the technical specifications set out below which are the ordinary specifications for a good class road for general traffic.

Bridges and roads shall be capable of carrying a double line of continuous columns of either heavy four-wheeled mechanical transport, six-wheeled mechanical transport or medium tanks. With regard to four-wheeled vehicles, the distance between the front axle of one vehicle and the rear axle of the vehicle next ahead shall be calculated at 20 ft., the load on each rear axle to be 14 tons, on each front axle to be 6 tons, and the distance between axles, 18 ft. With regard to six-wheeled vehicles, the distance between the front axle of one vehicle and the rear axle of that next ahead shall be calculated to be 20 ft., between rear axle and middle axle to be 4 ft., and between middle axle and front axle, 13 ft. ; the load on each rear and middle axle to be 8.1 tons and on each front axle to be 4 tons. Tanks shall be calculated for as weighing 19.25 tons, to be 25 ft. over all in length and to have a distance of 3 ft. between the front of one tank and the rear of the next ahead ; the load of 19.25 tons to be carried by tracks which have a bearing of 13 ft. upon the road or bridge.

Under paragraph 7 of the same Annex, it is agreed that :—

In addition to the roads specified in para. 6 (A) above, and for the same purposes, the Egyptian Government will construct and maintain the following roads :—

- (i) Cairo south along the Nile to Kena and Kus ;
- (ii) Kus to Kossier ;
- (iii) Kena to Hurghada.

These roads and the bridges thereon will be constructed to satisfy the same standards as those specified in para. 6 above.

It may not be possible for the construction of the roads referred to in this paragraph to be undertaken at the same time as the roads referred to in para. 6, but they will be constructed as soon as possible.

Para. 18 of the same Annex reads as follows :—

His Majesty the King of Egypt authorizes His Majesty the King and Emperor to maintain units of his forces at or near Alexandria for a period not exceeding 8 years from the date of the coming into force of the present treaty, this being the approximate period considered necessary by the two High Contracting Parties—

(a) For the final completion of the barrack accommodation in the Canal zone ;

(b) For the improvement of the roads—

- (i) Cairo-Suez ;
- (ii) Cairo-Alexandria via Giza and the desert ;
- (iii) Alexandria-Mersa Matruh.

It is further agreed that these roads will also be brought up to the standard specified above.

Thus a considerable programme of road construction is due to take place in the next few years. The following paragraphs of this chapter refer to present conditions.

### 3. Characteristics of Egyptian Roads

#### (a) *Cairo and Alexandria*

The roads in Cairo and Alexandria are tarmac, the newer roads being broad, with good surface. The metalling over the sand, however, is seldom very thick and repairs would be necessary after a period of extensive M.T. traffic.

In the older, crowded parts of Cairo and Alexandria, the roads frequently have a bad surface with many pot-holes. Trams also run along many of the streets, causing considerable congestion of traffic.

The new roads are often broad boulevards, with a strip of grass and trees down the centre, and one-way roadways on each side.

#### (b) *Delta and Nile Valley Roads*

With a few exceptions, and then generally only for short stretches near or through important towns, Egyptian roads are constructed of hard mud. A fair amount of motor traffic passes over these roads, but they will not stand heavy traffic for long and must be kept in constant repair. This backward state of road development, quite out of keeping with modern requirements, is ascribed to the vested interests of the Egyptian State Railways.

(c) *Effect of Wet Weather and Watering*

After rain, the unmetalled surface becomes extremely slippery and roads become virtually impassable for wheeled traffic. Fortunately, only a few days' wet weather are experienced each year.

To prevent the crumbling of the surface of such roads, regular watering is part of the scheme of upkeep. This is carried out over a stretch of half the width of the road at a time. Motor vehicles should keep to the dry side of roads which have been watered recently and pass each other with great caution. Skids on recently watered surfaces are difficult to avoid and, as many of the roads, especially in the delta area, border deep canals, a skid is liable to have serious consequences.

#### 4. Authority responsible for Upkeep

(a) *Towns*.—The Municipal authorities.

(b) *Between Towns*.—The Roads and Bridges Department of the Ministry of Communications. Permanent road gangs are employed.

#### 5. Bridges and Culverts

With few exceptions, the roads are bridged throughout, a very important detail in a country threaded with drains and irrigation canals. There are no standard types of bridges and culverts.

The majority of main road bridges are equal to all military loads, but there are exceptions, as will be seen from the following statistics of road bridges of military importance :—

(a) *Nile Crossings*

<i>Situation.</i>	<i>Type.</i>	<i>Load Capacity, etc.</i>
<i>Upper Egypt.</i>		
Aswan .. ..	Road	All military loads.
Isna .. ..	Road	All military loads.
Nag' Hammadi ..	Main road and railway.	Max. load on roadways, 2 tons. Max. width of vehicles, 6 ft. 2 in.
Nag' Hammadi Barrage.	Road	All military loads. Width, 13 ft.
Asyut .. ..	Road	All military loads.

*Cairo.*

Mohamed Ali ..	}	Road	Full details in Chapter IV —Political Geography— Towns, Cairo. All carry two-way traffic and all military loads.
El Malek el Saleh ..			
Abbas Hilmi ..			
Qasr el Nil ..			
English .. ..			
Boulac .. ..			
Zamalek .. ..	}	Road	
Imbaba .. ..			
		Railway and road.	Max. load on roadways, 8 tons. Max. width of vehicles, 8 ft. 5 in. Max. height, 11 ft. 8 in.
<i>Delta Barrage</i> ..		Road	Max. load, 3 tons.

*Rosetta Branch*

Kafr el Zaiyat ..	Railway and road.	A most important bridge on the Cairo—Alexandria route. Max. load on roadways, 2 tons. Max. width of vehicles, 6 ft. 2 in. In an emergency, tanks could cross on central rail track, at some risk to permanent way.
Disuq .. ..	Railway and road.	Max. load on roadways, 8 tons. Max. width of vehicles, 8 ft. 5 in. An alternative crossing to Kafr el Zaiyat for heavy vehicles.
Edfina .. ..	Railway and road.	Max. load on roadways, 6 tons. Max. width of vehicles, 8 ft. 5 in.

*Damietta Branch.*

Benha .. ..	Road	All military loads.
Zifta (a) (2 miles north of town).	Road	All military loads. Road, 14½ ft. wide.
(b) .. ..	Railway and road.	Max. load on roadways, 2 tons. Max. width of vehicles, 6 ft. 2 in.
Talkha—Mansura	Railway and road.	Max. load on roadways, 3 tons. Max. width of vehicles, 6 ft. 2 in.

(b) *Suez Canal Area*

Port Said. Manzala Canal.	Road	Max. load, 5 tons. Width, 10 ft.
Qantara. Sweet Water Canal.	Road	Max. load, 4 tons. Width, 12 ft.
Ismailia, all over Sweet Water Canal:		
(i) Marine ..	Road	Max. load, 3 tons. Width, 12 ft.
(ii) Chevalier Island.	Road	Max. load, 3 tons. Width, 12 ft.
(iii) Moascar ..	Road	Max. load, 12 tons. Width, 16 ft.
(Though the calculated load is as stated, it is probable that this bridge would carry 15 ton tanks, if they kept rigidly to the centre of the road.)		
Suez, over outfall of Sweet Water Canal.	Road	Max. load, 9 tons. Width, 12 ft.

Bridges on roads other than the main roads are, as a rule, only constructed to carry light weights and have occasionally broken down under traction engines, but in necessity, they can in most cases be relied upon to carry weights up to 5 tons.

In the case of roads running along railway lines or where light railways have been constructed on the roadways, bridges are almost invariably floored for traffic, but culverts crossing the smaller canals are sometimes made with open sleepers at intervals. To render them passable for animals, it would be necessary to carry a sufficient supply of 7-ft. chesses 6 in. wide. In view of this, these routes should not be used without previous reconnaissance.

## 6. Delta Roads and Military Movement

(The following remarks, where of a general nature, apply with equal force to the roads of the Nile valley and the Faiyum.)

The roads in the delta generally radiate from Cairo in a north-east, north, or north-west direction. This convergence of roads toward the capital and scarcity of bridges over the two branches of the River Nile, make movement from east to west, or vice versa, across the delta less direct.

The only bridges over the Nile north of the Delta Barrage, where the river forks 14 miles north-west of Cairo, are at Benha, Zifta, Mansura, and Damietta, over the Damietta or eastern branch, and at Kafr el Zaiyat, Disuq and Edfina, over the Rosetta or western branch.

The majority of the delta roads are of the type described in para. 2 above.

The delta is thickly populated, and towns and villages are numerous. Practically all the important towns are in direct road communication with each other. The roads vary in width from 12 to 18 ft.

Many roads are now (1936) being widened and some new ones built. Roads are sometimes completely closed for widening or replacement of old bridges. The passage of roads running along the banks of the larger canals is occasionally blocked or narrowed by water wheels. For these reasons, reconnaissance should always be carried out before despatching M.T. columns in the delta.

The greatest road development is at present taking place in the coastal strip between Damietta and Rosetta. In this sector, considerable areas of marshland are being reclaimed and new roads are being made.

*Parking Places* for M.T. are difficult to find. Only the large towns, where there is sometimes an open square or recreation ground, or a big compound, afford any facilities for parking off the roads.

*Villages and Towns.*—These often present a serious bottle-neck. The road is generally very narrow through a village or town, with bad surface. On market days, the road is obstructed with numerous stalls and crowds of peasants.

Owing to the lack of signposts, the narrowness of the streets, and the peculiar way in which a good country road degenerates at the outskirts of a town, map reading is difficult and it is very easy to miss a turning.

*Traffic.*—There is very little motor traffic on the delta roads, except in or near the large towns. The number of private motors, owned and driven by Egyptians, is, however, increasing each year. There are a number of motor passenger buses, chiefly small Chevrolets and Fords, in bad condition, which convey the country people about. These are invariably overloaded.

There is at present very little haulage of goods by motor vehicles in the delta.

Although motor traffic on the delta roads is light, there are many obstacles to quick movement by day.

There are always large numbers of peasants moving along the roads, or stationary at the roadsides with cows and water buffaloes; on market days, there is a general influx of peasants, with camels, mules, carts, donkeys and sheep, into the towns.

The Egyptian "fellah" is devoid of "road sense," and appears to have little idea of the danger of being run over by a motor.

For these reasons, great care is necessary when driving in the delta and high average speeds are not possible.

*Road Signs.*—Roads in the Delta are not well sign-posted. There are very few direction posts, and the names of towns and villages are not shown, except at the railway stations. Signposts are all confined to the first class-roads.

*Police.*—The Egyptian Police are very willing to give assistance to military motor traffic.

Guides are useful to direct M.T. convoys through towns or difficult sectors where wrong turnings may be made.

The Police will also give information about bridges, bivouac sites, parking places, water, etc., and supply patrols to keep off crowds of curious sightseers which collect in an incredibly short time.

*Footpaths.*—Numerous footpaths exist, winding through the cultivation, which invariably lead from village to village, but they should be reconnoitred before use. They are, in places, wide enough for a cart and in other places impassable, except for a beast or a man on foot, while the difficulty of crossing the irrigation canals is such that it is necessary to have a guide to show the way. The smaller irrigation cuts could be bridged with 7 ft. chasses, but the larger canals would require material for a bridge of 10 ft. span.

## 7. Details of Principal Roads in amplification of Road Map.—Delta

### (a) *Cairo to Alexandria, 140 miles*

The main road from Cairo to Alexandria runs almost due north as far as Tanta, where it turns north-west and enters Alexandria round the eastern edge of Lake Mariut. The road is of tarmac from Cairo to Qaliub and from Damanhur to Alexandria. The remainder is of mud. During dry weather, it is a first-class road throughout its length, and this condition will probably become permanent as, even before the Anglo-Egyptian Treaty which provides for the section from Tanta to Alexandria, projects had been drawn up for the metalling of the whole road. Tanta is a difficult

town to negotiate, but it is hoped that it will be improved in the course of the next few years. There is a by-pass to the west of the town. The bridge at Kafr el Zaiyat consists of a single line of roadway on either side of the main railway line. The maximum load allowed on the roadways is two tons and they are insufficiently wide to take medium tanks, the width being 6 ft. 2 in. If necessary, tanks could cross by using the railway track. Heavy vehicles can also cross at Disuq, 40 miles down stream, which will carry vehicles up to 8 tons.

*(b) Cairo-Alexandria Desert Road, 118 miles*

A desert road for light car traffic was completed in June, 1936. The road, which is of the "mix-in-place" type, (except for the first 7 miles to Abu Rawash and the last 15 miles south of Amiriya, which are metalled and tarmaced), forks to the right from the Cairo-Giza Pyramids road a little short of the Mena House Hotel and proceeds via Abu Rawash to the Wadi Natrun near Bir Hooker, thence via El Amiriya and Mex into Alexandria. There are few conspicuous landmarks. Small quantities of water and petrol can be obtained at the Shell Company's Rest House near the Wadi Natrun. This road is of considerable military value as, avoiding the large delta towns and Nile crossings, it gives direct access to the Coastal Belt of the Western Desert. A force could deploy off the road anywhere throughout its length, but patches of scrub and drift sand in the section north of the Wadi Natrun would hinder movement. In emergency, this road would be capable of taking all military traffic for a short period, but the surface would break up under continuous heavy traffic and is unsuitable for vehicles not equipped with pneumatic tyres. High speeds are possible on the road throughout its length. Under the terms of the Anglo-Egyptian Treaty of Alliance, 1936, this road is to be brought up to the standard of the other first-class roads specified, in due course.

*(c) Cairo-Port Said, 144 miles*

This road is due to be re-constructed as a first class road under the terms of the Treaty. From Cairo to Tel el Kebir, the road is at present (December, 1936) mud and is carried across typical Delta country. There are no gradients, but about Shebin el Qaniter the road is narrow. There are several sharp corners and railway embankments to be negotiated, but the town of Shebin el Qaniter can be avoided by taking the road through Abu Zaabal Prison (a special pass from the State Prisons Department is necessary in normal times), along the west bank of the Ismailia Canal,

rejoining the main road 13 miles later at Inshas el Raml. Military vehicles have, however, used the normal main road successfully for some years.

At El Abbasa, 56·4 miles from Cairo, the Ismailia Sweet Water Canal is crossed by a 11 ft. 6 in. swing iron gradient bridge. At Tel el Kebir, 62·8 miles from Cairo, the road recrosses the Ismailia Sweet Water Canal by a swing bridge 12 ft. wide and 45 ft. long, and continues as a dry metalled road on the northern bank of the canal to Ismailia. The above bridges can both be swung by one man.

Assuming, as it is reasonable to do, that the only formidable form of blocking which can be carried out is the destruction of bridges and culverts, no real problem arises between Cairo and El Abbasa as there are innumerable alternate routes through the cultivation to the west.

The destruction of either the above bridges would, however, be serious, as the north bank of the Ismailia Canal between El Abbasa and Tel el Kebir is cut by a sluice which makes it impassable to armoured cars, and it is estimated that it would take 15 men three days to bridge the gap. No satisfactory trans-desert deviations have been found which would enable armoured cars or lorries to leave the Cairo-Ismailia road south of these bridges and proceed to Ismailia by desert track.

It would, therefore, appear that if either of these bridges was destroyed, the quickest route from Cairo to Ismailia would be *via* Suez.

From Ismailia to Port Said, the road follows the west bank of the Suez Canal. It is tarmaced throughout and maintained in a good state of repair by the Suez Canal Company to whom it belongs. A permit, issued by the company is necessary before driving a car along this road. Cars are not allowed along this road at night unless fitted with dippers or dimmers.

#### (d) *Alexandria-Ismailia*

The Cairo road is taken as far as Tanta. After this, a first-class mud road leads to Zagazig and Tel el Kebir, where it joins the Cairo-Port Said route. This road is due to be reconstructed throughout under the terms of the Anglo-Egyptian Treaty of Alliance, 1936.

#### (e) *Cairo-Suez, 90 miles*

The Cairo-Suez road, hitherto except for the last 15 miles into Suez an extremely rough dry metalled road, is now (1936) in a state of transition and virtually complete as a first-class tarmac road.

The road is broad and can carry two lines of traffic throughout its length. It is tarmaced to a width of approximately 21 ft., with a considerable hard sand freeboard, and high speeds can be maintained. There are small bridges and culverts every few miles to allow flood water to run down the wadis. They have all supported medium tanks. Cross country movement is possible on either side of the road. Under the terms of the Anglo-Egyptian Treaty of Alliance, this road is due to be brought up to the standard of the other roads specified, but even in its present form, it is suitable for sustained traffic by all classes of military wheeled vehicles.

(f) *Cairo-Faiyum via Desert Route, 35 miles*

A well-marked made-up road leads from the Pyramids of Giza to the Faiyum across the desert. About 20 miles of the central portion of this road is tarmaced and in good condition. The remainder is metalled, but rough and liable to strain motor vehicles. It is understood that this road, which has been improved greatly in the past two years, will eventually be tarmaced throughout. Sand is inclined to drift on to the road in places.

(g) *Ismailia-Suez, 63 miles*

The Suez Canal Company in 1933 completed a first-class road from Ismailia to Suez. Tarmaced as far as Deservoir Station, it hugs the west bank of the Suez Canal until the latter enters the Bitter Lakes. From Deservoir Station to the southern point of the Little Bitter Lake, it is dry metalled and varies between 25 and 35 ft. broad. The remainder of the road is tarmac 19 ft. broad. The road Port Said-Ismailia-Suez is due to be constructed and maintained as a first-class road under the terms of the Anglo-Egyptian Treaty of Alliance.

The Suez Sweet Water Canal on the west is crossed by the following bridges (*see* Map No. 6, Suez Canal):—

<i>Situation.</i>	<i>Type.</i>	<i>Capacity.</i>
1. Chevalier Island (Ismailia).	Road.	Maximum load, 3 tons. Width, 12 ft.
2. Marine (Ismailia)	Road.	Maximum load, 3 tons. Width, 12 ft.
3. Moascar ..	Road.	Maximum load, 12 tons. Width, 16 ft.
4. Nefisha Lock ..	Gangway over lock gates.	Pack animals. Motor cycles.

<i>Situation.</i>	<i>Type.</i>	<i>Capacity.</i>
5. Serapeum Bridge	Road, single lifting bridge.	Maximum load, 2 tons. Width, 7 ft.
6. Fayid Station ..	Pontoon.	Single pack animals. Motor cycles.
7. El Bardiwili ..	Lifting light railway bridge.	Maximum load, 5 tons (if decked). Height, 9 ft. 0 in. Width, 6 ft. 3 in.
8. El Hawiz ..	Double lift road. Bridge at lock.	Maximum load, 1 ton. Width, 11 ft. 6 in. Height, 11 ft. 3 in. Light cars only. In poor condition.
9. Shallufa Bridge.	Lock Do.	
10. El Kubri ..	Pontoon.	Maximum load, 1 ton (at present). Road width, 10 ft. 6 in.
11. Suez (over outfall of Sweet Water Canal).	Road.	Maximum load, 9 tons. Width, 12 ft.

*Notes.*—(i) Approaches on east side to bridges 5, 7, 8 and 9, are via Sweet Water Canal bank, which is often liable to be blocked.

(ii) Bridge No. 10 could be increased to take medium loads if two short sleeper or similar ramps were provided for getting on and off the Pontoon.

At El Kubri, a ferry, capable of carrying two armoured cars, connects Egypt with the Sinai—Jerusalem road (*see* Chapter VII—Sinai, and Chapter VIII—Suez Canal).

### Upper Egypt

In Upper Egypt there are two main roads. One road is on the east bank of the Nile from Cairo *via* Helwan to Kureimat, the portion from Cairo to Helwan being a first-class tarmaced road, and the other on the west bank from Giza to Asyut *via* Wasta, Beni Suef and Minya. The Provinces of Giza, Beni Suef and Minya and the northern portion of Asyut are well served with systems of earth roads. These roads run both parallel with the main road on the west bank of the Nile, and laterally to link up the system.

South of Dairut, the basin system of irrigation is still in use and all the land is flooded annually. Consequently, the roads run on the irrigation banks. Communication on any bank which is regularly used as a road is reliable. Otherwise conditions are similar to those described for canal bank roads in Lower Egypt.

South of Asyut, the road system deteriorates. The main road continues. Between Asyut and Sohag the road is narrow and twisting. At Nag 'Hammadi, some 50 miles further south, the road crosses the railway bridge to the right bank of the Nile, through Luxor to Isna, where it crosses the River Nile once again to the left bank, thence continuing to Idfu.

As far as Idfu, the road is passable for all M.T., except for one bridge at El Shaghab, between Luxor and Isna, which will not take heavy lorries. When the canal is not full of water, it is possible to construct a temporary road at the side of the bridge. There are many narrow bridges between Luxor and Idfu, which must be negotiated with care by A.F.V.s and lorries, but these would not hinder light cars.

South of Idfu, the road ceases altogether, though it is possible to reach the left bank of the Nile opposite Aswan by desert track, provided vehicles are equipped with sand tyres. To reach Aswan itself, personnel have to be ferried across the river. The track continues to Wadi Halfa.

The above roads can be taken as serviceable at all times of the year, except during March and April, when they are being rebuilt with mud for the flood season, or in rainy weather. (See para. 2 of this Chapter.)

Under the terms of the Anglo-Egyptian Treaty of Alliance, a first-class road to an agreed specification is to be constructed from Cairo southwards along the Nile to Qena and Qus.

### **The Faiyum**

Faiyum Province has an excellent system of roads, which is connected with the Cairo-Asyut road by a macadamised road which runs across the desert from near Riqqa, and also by an earth road with stretches of tarmac which passes Lahun to Beni Suef town. The route to the Faiyum from Cairo, across the desert, is described in para. 7 (f) above.

### **8. Desert Tracks**

See Chapter VI, Sections B and C, Western and Eastern Deserts, Chapter VII—Sinai—and Map No. 1.

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## CHAPTER XII

**NAVIGABLE WATERWAYS**

(Reference Map No. 7.)

(Exclusive of the Suez Canal, which is described in Chapter VIII.)

General.

Levels, Closure, Limited dimensions.

Main Traffic Routes.

Lower Egypt.

Cairo to Alexandria, Cairo to Ismailia, Port Said and Suez, Rayeh Tewfik and Branches, Bahr Shebin and Rayeh Abbasse, Rayeh Beheira, Nile to sea, The Lakes.

Middle Egypt.

Ibrahimia Canal, Bahr Yusef.

Upper Egypt.

The Nile.

River Transport Firms and their Steamers.

Thos. Cook and Son, Ltd. ; Anglo-American Nile and Transport Co.

**1. General**

Irrigation is the primary function of the canal system of Egypt. As a secondary function, these canals make valuable highways for goods traffic. It is important to remember, therefore, when arranging water transport that canal levels are regulated firstly as the needs of irrigation dictate and that traffic takes second place. The information given in this section can only be of a general nature ; for example, while during January of some years all the canals in the delta are closed for cleaning and repairs, water is kept in the Sweet Water Canal and other big canals in order not to interrupt navigation. For the foregoing reasons, the bulletins of the Irrigation department should invariably be consulted immediately before sending off barges.

The principal canal routes are provided with lift or swing bridges, regulators, locks, etc., throughout, and along these routes large boats can be navigated all the year round, except during the winter closure referred to above. Large boats can navigate many other canals during part of the year, while navigation is possible over still more highways for small boats which can lower their masts to pass under fixed obstructions.

The limiting dimensions for barges are as follows :—

Description of Vessel.	Max. Length.		Max. Width.		Max. Draft.	
	Metres.	Feet.	Metres.	Feet.	Metres.	Feet.
Steam or motor barges.	40	131	7	23	2	6½
Cargo barges ..	33·1	108½	6	19½	2	6½
Tugs .. ..	22	72	4·4	14½	1·7	5½
Country boats	22	72	6	19½	2	6½

## 2. Main Traffic Routes

The main waterways will be described in the following order :—

### *Lower Egypt.*

#### (a) Cairo—Alexandria—

- (i) Via the Rosetta branch of the Nile.
- (ii) Via Minufia and Baguria Canals.
- (b) Cairo—Ismailia, Port Said and Suez.
- (c) Rayeh Tewfik and branches (Bahr Moes, etc.).
- (d) Bahr Shebin and Rayeh Abbasse.
- (e) Rayeh Beheira.
- (f) Nile to the sea.
- (g) The Lakes.

### *Middle Egypt.*

- (h) Ibrahimia Canal.
- (i) Bahr Yusef.

### *Upper Egypt.*

- (j) The Nile.

Map No. 7 shows the canals and the most important towns served by them.

## Lower Egypt

### (a) *Cairo to Alexandria*

(i) *Via the Nile.*—The Cairo terminus for almost all routes is at Rod-el-Farag, which is north of all the Cairo bridges and has good loading wharves. There is deep water

and no obstacle to navigation as far as the Delta Barrage. The route then proceeds via the Nile, passing Kafr el Zaiyat and Shubrakhit, as far as El Aft, the only obstacles being the E.S.R. main line railway bridges at Kafr el Zaiyat and Disuq. At El Aft, the Mahmudia Canal is entered by a lock 53·4 metres (175 ft.) by 11·9 metres (39 ft.), and at Kafr el Dawar is another lock 58·6 metres (192 ft.) by 11·9 metres (39 ft.). Several opening or swing bridges span the canal, which is never closed to navigation.

*Navigation Particulars.*—This, when it is open, is far the best route from Cairo to Alexandria, the journey taking a tug or power barge about 3 days. It can be used safely from some time in August to some time early in January and often later, but never after mid-February, when the barrage is shut and the water becomes too shallow. Navigation becomes impossible for boats drawing 1·4 metres (4½ ft.) when the gauge downstream of the weir at the Barrage records 11·6 metres (38 ft.) or less, and it is difficult when the gauge has dropped to 12·2 metres (40 ft.). Sand-bank formations may alter these figures in exceptional years.

In some years navigation is rendered very difficult, or even liable to complete interruption, in either March or April, owing to the reduction of the river level at the Barrage to enable the earth "sudd" or bank, which is thrown across the river annually near Edfina (approximately 12·9 km. (8 miles) north of El Atf) to be closed.

The interruption is due to the water falling too low relative to the sill of El Atf lock. A similar interruption may, but rarely does, take place in July in a bad year due to the El Atf irrigation pumps having pumped the water in the pool upstream of the "sudd" too low.

The Mahmudia Canal is vulnerable throughout. It can only draw its water by gravity from the Nile at El Atf during times of high flood; at other times, pumps at El Atf, capable of raising 660 million gallons a day, are used and the Canal is also fed from the Khatatba (Sah el Narqas) and Khanduq Canals. Its depth varies from 1·8 metres (6 ft.) in summer to 3·05 metres (10 ft.) in flood. In large numbers of places, very little work is required to cut the banks and let the water out, and from El Atf to the junction near Damanhur, the channel has to be dredged continuously.

(ii) *Via Minufia and Baguria Canals.*—This route diverges from that previously described at the Delta Barrage.

Boats pass through a lock into the Rayeh Minufia, which they follow for 24.1 km. (15 miles) to the head of the Baguria Canal. This canal, after running close to Minuf, rejoins the Nile at Qoddaba without touching any important towns. From thence to Alexandria, the route is as before, via El Atf and the Mahmudia Canal. The distance from Cairo to Alexandria by this route is 262 km. (163 miles).

*Navigation.*—The journey by this route takes 6 days compared with 3 days by route (a) (i). Its only advantage is that it can be used all the year round except the period of winter closure and in some years the last half of December. There is normally water for boats drawing 2 metres ( $6\frac{1}{2}$  ft.), though in exceptional years of low supply, craft drawing over 1.5 metres ( $4\frac{3}{4}$  ft.) cannot use the canal for a short period during the summer.

There is an E.S.R. bridge over the Rayeh Minufia at Kafr Sarawa, north of Darawa, and many locks and bridges over the Baguria Canal before it enters the Nile at Qoddaba through a triple lock.

The narrowest navigable opening is 7.8 metres ( $25\frac{3}{4}$  ft.) and the shortest lock 49.4 metres (162 ft.).

*Vulnerability.*—With so many obstacles, by the manipulation of most of which navigation can be made impossible, it is clearly not a route to rely upon in times of disturbances, and in 1919 it was not thought wise to use it until armed launches had been sent through. Then a large armed convoy of 39 boats of between 50 and 200 tons, accompanied by tugs, was sent through satisfactorily.

(b) *Cairo to Ismailia, Port Said and Suez*

The Ismailia or Sweet Water Canal is extremely important, both for navigation and water supply, and will consequently be described in some detail.

The canal is entered from the Nile at Shubra, 5 miles north of Cairo, through a lock 39.65 metres by 8.4 metres (130 ft. by  $27\frac{1}{2}$  feet), (its length can be increased to 45.1 metres (148 ft.) by using timbers). Just downstream is the main Cairo-Delta road bridge, with a 8.4 metres ( $27\frac{1}{2}$  ft.) clear span for navigation, and the Shubra railway bridge 10.9 metres ( $35\frac{3}{4}$  ft.) clear span.

From a point 3.2 km. (2 miles) downstream of Shubra, a dead end junction canal runs up to Ghamra, a suburb of Cairo. Originally, the main canal left Cairo at Kasr el Nil and this dead end is all that is left of the old alignment.

Particulars of the locks and bridges are as follows:—

Place.	Distance from Nile.	Dimensions of navigable opening.
*Siriaqus Lock ..	12·9 km. (8 miles)	31·7 by 8·4 m. (104 by 27½ ft.).
Abu Zaabal E.S.R. Bridge.	24·1 km. (15 miles)	16·8 m. (55 ft.).
Abu Zaabal Delta light Railway Bridge.	24·9 km. (15½ miles)	8·1 m. (26½ ft.).
South Zawamel Bridge.	36·2 km. (22½ miles)	8·4 m. (27½ ft.).
North Zawamel Bridge.	38·6 km. (24 miles)	9·9 m. (32½ ft.).
*Bilbeis Lock ..	49·9 km. (31 miles)	37·8 by 8·4 m. (124 by 27½ ft.).
Abasa Bridge ..	70·8 km. (44 miles)	8·4 m. (27½ ft.).
Tel-el-Kebir Bridge.	79·7 km. (49½ miles)	8·4 m. (27½ ft.).
*Qassasin Lock ..	94·95 km. (59 miles)	37·5 by 8·4 m. (123 by 27½ ft.).
Nefisha E.S.R. Bridge.	123·9 km. (77 miles)	7·9 m. (26 ft.).
Ismailia Upper Lock.	127·1 km. (79 miles)	38·7 by 8·4 m. (127 by 27½ ft.).
*Ismailia Lower Lock.	127·9 km. (79½ miles)	37·7 by 8·4 m. (123½ by 27½ ft.).

\* These locks can be lengthened to 42·7 m. (140 ft.) in an emergency by using timbers.

Just before the Abasa Bridge, the canal is joined by the Wadi Canal, described under route (c). Just below Nefisha Railway Bridge, the Suez branch forks off through a lock, and the Port Said branch does the same a mile above Ismailia Upper Lock. There are five locks (two disused) and a bridge at Fayid on the Suez branch, and several low bridges on the Port Said branch. Neither can be considered navigable for practical purposes, though they can be made so on occasion for small boats and dredgers.

*Navigation.*—During the War of 1914–18, this canal was much used for the transport of all kinds of military material from Port Said, Suez, Kantara, and direct from ships. Navigation of the Shubra road and railway bridge is difficult and slow, as the current is strong and the railway is the only main line into Cairo from the entire Delta. Owing to

the serious obstacles at the Shubra end, the branch to Ghamra, where there are good loading places (a quay length of 27·4 metres (30 yards) and a railway siding), was used as the Cairo terminus.

The canal is open to navigation throughout the year (except for the winter closure) to vessels of 2 metres ( $6\frac{1}{2}$  ft.) draught and less. In most years there is ·91 metres (3 ft.) of water during the closure.

*Vulnerability.*—The canal level could be lowered, navigation stopped and the water supply of Moascar, Ismailia, Kantara, Port Said and Suez cut off by any of the following methods, or a combination of them :—

- (i) Closing the head sluice at Shubra.
- (ii) Closing the Siriaqus lock.
- (iii) Cutting the left bank practically anywhere between Bilbeis and Abasa.
- (iv) Cutting the right bank almost anywhere between Bilbeis and Ismailia and throwing bank across.
- (v) Closing either the Port Said or Suez branch or cutting their banks.
- (vi) Running the water out through Ismailia lock into Lake Timsah.

If there is any blockage of the Sweet Water Canal between Shubra and Abasa, the best alternative route is *via* the Rayeh Tewfik and Bahr Muweis (*see* Route (c)). A third route for very small boats is by the Sharqawia Canal and Bahr es Shebin. The former leaves the Nile a short distance north of the Ismailia Canal head, and at Shebin el Qanatar flows into the Bahr es Shebin, which joins the Wadi Canal 9·65 km. (6 miles) from Abasa. Transport using this route must not be more than 5·8 metres (19 ft.) in width.

The Sharqawia Canal could quickly be made dry at any time by closing the regulator at the head and in time of flood reinforcing it with an earthen dam.

#### (c) *Rayeh Tewfik and Branches*

The Rayeh Tewfik is the easternmost of the three big canals, Rayeh Beheira, Rayeh Minufia and Rayeh Tewfik, which take off from the Nile just below the Delta Barrage. It passes under an E.S.R. bridge and runs almost straight to Benha and thence to Mit Ghamr, where there is a lock into the river at Zifta. From this point onwards it is called the Mansuria Canal and continues close to the Nile, through Aga to Mansura where it finally joins the river through

another lock. There are three main branches, Bahr Muweis, Buhia Canal and Bahr el Saghir, and a network of minor branches.

The Bahr Muweis leaves the Rayeh Tewfik 3 miles north-east of Benha and runs to Zagazig, up to which point it is navigable, and thence in the direction of Lake Manzala. It forms a very valuable cross connection with the Sweet Water Canal by means of the Wadi Canal. This latter takes off just upstream of the Zagazig regulator and runs 19·3 km. (12 miles) to Abasa on the Ismailia Canal.

The Buhia Canal leads from Mit Ghamr to Simbillawein, but it is not navigable.

*Navigation.*—The distance by the Rayeh Tewfik from the Delta Barrage to Mansura is 106·2 km. (66 miles).

The Rayeh Tewfik is a very fine navigable line, provided with opening bridges throughout. Connected with the river as it is at Zifta and Mansura, and the river being non-navigable, except just upstream of the Zifta Barrage and downstream of Mansura for large parts of the year, it serves an extremely useful purpose. Boats can pass from the Ismailia Canal *via* the Wadi Canal to Zagazig and thence by the Bahr Muweis into the Rayeh Tewfik; out of it southwards to the river at Cairo; out of it northwards to the river at Zifta; and across it through the Rayeh Abassi into the whole of the central Delta system; down it to Mansura, thence to Manzala or down the river to the sea.

There are regulators and locks at—

Gangara	..	37	km. (23 miles)	from the head,
Mit Ghamr	..	64·4	km. (40·3 miles)	from the head,
Sanayta	..	82	km. (51 miles)	from the head,

and Mansura. The Mansura head lock at Mit Ghamr is the smallest, measuring 34·8 metres by 4·9 metres (114 by 26 ft.). The depth varies from 4 metres (13 ft.) in summer to 5·9 metres (19½ ft.) in flood.

The Wadi Canal also has several bridges and locks. Dimensions of barges using it must be limited to 32·6 by 5·8 metres (107 by 19 ft.)

The Bahr el Saghir from Mansura to Manzala is navigable in winter only.

All these branches have bed widths of 10 to 11·9 metres (33 to 39 ft.) at the heads and depths varying from 1·5 metres (5 ft.) in summer to 4 metres (13 ft.) in flood time.

*Vulnerability.*—With the aid of the head and lock constructed just above the new Zifta Barrage, it is possible to empty the canal in a couple of days at most times of the year. During flood time, however, it is not possible to empty the canal above Mit Ghamr, as it would entail excessive pressure on the head.

As the main canal runs parallel and close to the river, there would not be much object in cutting off the canal water supply. Any of the branches could be closed in a couple of days.

(d) *Bahr Shebin and Rayeh Abbasi*

The 24.1 km. (15 miles) of the Rayeh Minufia, from the Delta Barrage to the junction of the Baguria Canal and the Bahr Shebin, have already been described under Route (a) (i). The Bahr Shebin flows through Shebin el Kom, Santa and El Rahebein (just north of Mehalla el Kubra) and reaches the sea 188.3 km. (117 miles) from its junction with the Baguria Canal. The last 56.3 km. (35 miles) are known as the Bahr Bassendila. The most important branch is the Rayeh Abbasi, a short canal 9.65 km. (6 miles) long which joins the Damietta branch of the Nile at a point 3.2 km. (2 miles) below Zifta and so completes a cross-country route from the Ismailia Canal to the central and western Delta.

*Navigation.*—The bed width of the Bahr Shebin varies from 49.4 to 34.7 metres (54 to 38 yards) and its depth from 2.9 to 5.9 metres ( $9\frac{1}{2}$  to  $19\frac{1}{2}$  ft.). It may be mentioned here that in summer the Delta canals are divided into sections from which water is extracted for irrigation in turn. Under this arrangement, the tail section of a canal is often dry for 12 days or more and the central section for a week. For example, the Bahr Shebin below Dumeira is often dry for 10 to 12 days in summer.

Rahebein Lock is 39.95 metres long by 8 metres wide (131 by  $26\frac{1}{4}$  ft.). There is a navigable line through to the sea coast *via* two different routes—

(i) From Rahebein down the Bahr Shebin to Dumeira, thence into the Bahr Bassendila and down it to the tail lock, by which boats can pass into No. 2 Drain which empties into the sea about 6 km. ( $3\frac{3}{4}$  miles) further on.

(ii) From Rahebein down Bahr Shebin into the Bahr Tira, thence into the Central Garbia Main Drain at Sahalib Locks. This drain empties into the sea just east of Baltim.

*Vulnerability.*—The supply of water to all the canals in the Central Delta could be cut off and the canals run dry in a few days by manipulation of the Delta Barrage, though in flood some water would have to be kept in the Bahr Shebin as far as Melig in order to prevent excessive pressure on the regulators. By suitable handling also, the level of water in any one canal could be raised until the banks give way.

(e) *Rayeh Beheira*

The Rayeh Beheira, merging into the Khatatba about 25 miles from its origin at the Delta Barrage, is the main canal west of the Rosetta branch of the Nile. A regulator (not navigable) at Khatatba connects the canal to the river. The canal throws off two big branches at Kafr Bulin, close to Negela, which a little further on develop into the Nubaria, Hager, Ferhash and Abu Diab canals. The main branch continues to Kafr el Eis, where the Khandaq Canals, one on each side of the Kafr el Zaiyat—Alexandria Railway, take off. From Kafr el Eis the canal is called the Sah el Narqas Canal to El Atf, where it feeds the Mahmudia Canal.

*Navigation.*—Although one of the main irrigation canals, the Rayeh Beheira is of little value for navigation as it serves no towns and boats can only proceed as far as Kafr Bulin 80·5 km. (50 miles) from the Delta Barrage. The ruling dimensions are 34·2 by 7·8 metres (112 by 25½ ft.). Barges over 10·7 metres (35 ft.) long cannot navigate this canal.

*Vulnerability.*—The Rayeh Beheira and the Khatatba Canal and its branches could be easily emptied by cuts into the river at many points, except during high flood, when the effect of a cut would be to wreck the canal and flood the country by the admission of an excessive discharge.

(f) *The Nile to the Sea*

The Rosetta branch as far as El Atf has already been described when dealing with the Alexandria route, where it was stated that navigation in this stretch was only possible from August to January. Between Atf and the sea, the only obstacle to navigation is Edfina Sudd, usually closed in April and broken on the arrival of the floods in early August.

The effect of this sudd is to increase the depth of water above it and so to make the river navigable from Kafr el Zaiyat to Edfina for boats of 1·8 metres (6 ft.) draught and less.

The best months for entering the river from the sea are November and December. With a south wind, boats drawing 1·8 metres (6 ft.) can generally pass the shifting sand bar at the river mouth in very calm weather, though navigation in flood time is difficult. During the War of 1914-18, ships were kept under steam in Alexandria harbour ready to sail directly a telephone message was received from the Arab pilot watching the bar.

The Damietta branch from the Delta Barrage to Mansura is not much used for navigation as the Rayeh Tewfik, parallel to it, is more convenient and open for longer periods. From the closing of the barrage in February till its opening in August, no water passes down the Nile. Navigation from Mansura to Damietta town is possible from the end of July until the sudd, which is constructed annually above Damietta, is closed; after December, navigation becomes difficult for large boats. At the mouth of the river is a shifting sand bar of from ·91 metres to 1·5 metres (3 to 7 ft.), over which boats drawing 1·8 metres (6 ft.) can sometimes pass.

#### (g) *The Lakes*

Lakes Manzala, Burullus and Idku, are very shallow. Under the influence of the discharge escaping from the canals and drains in flood, they rise ·46 or ·6 metres ( $1\frac{1}{2}$  to 2 ft.), but even then the maximum depth is not more than 1·8 metres ( $6\frac{1}{2}$  ft.) and the mean depth is much less.

Each lake has an opening to the sea, which gets blocked by sand drift in the summer and opens again when the surface of the lake begins to rise during the flood season.

Lake Burullus is connected with the river at Disuq by the Bahr Saidi, navigable in flood with a mean depth of 3 metres ( $9\frac{3}{4}$  ft.). The smallest lock is 26·8 metres long by 5·9 metres wide (88 by  $19\frac{1}{2}$  ft.).

### **Middle Egypt**

#### (h) *Ibrahimia Canal*

This magnificent canal takes off from the west bank of the Nile at the Asyut Barrage and supplies the whole perennial system from Asyut to Cairo. At Dairut, 59·5 km. (37 miles) from its head, there is a system of regulators

for the supply to several branch canals. Navigation is only possible for a further 12·89 km. (8 miles) to Roda, but the canal continues as far as Ayat, supplying Beni Suef and Wasta on the way.

*Navigation.*—The Dairut regulator lock is 34·8 by 4·9 metres (114 by 26 ft.); the head regulator lock is larger than this and the various road bridges all have swing spans; 1·8 metres (6 ft.) of water can be relied on in this canal. Navigation is sometimes possible during the winter closure.

*Vulnerability.*—By opening the river escapes at either Dairut or Asyut, the whole summer supply of water to Middle Egypt and the Faiyum can be stopped.

(i) *Bahr Yusef*

The Yusef Canal, taking off from the Ibrahimia at Dairut, after meandering partly in a natural and partly in an artificial channel for a distance of over 199·5 km. (124 miles), enters the Faiyum at Lahun. Here there is a regulating head, by means of which either the water supply of the Province could be stopped or parts of the Province inundated during flood.

This canal is navigable from the lock at its head to Lahun. It is spanned by three regulating bridges, with locks 24·7 by 5·8 metres (81 by 19 ft.).

This canal will also take boats drawing 1·8 metres (6 ft.), except during the closure.

## Upper Egypt

(g) *The Nile*

The following is also included in Chapter V, para. 3, The Nile, for comprehensive reference.

Between Wadi Halfa and Aswan, the Nile is navigable throughout the greater part of the year by sailing boats and steamers drawing not more than 6 ft., but at low water navigation is intricate and not devoid of danger, even for vessels of 3 ft. draught.

The sailing distance along the navigable channel from Aswan Dam to the Delta Barrage varies between 600 and 570 miles in low Nile and flood respectively. The width in

high flood may be taken to vary between 870 and 1,090 yards, though these are not extreme limits. The fall is about 1 in 12,000.

Sub-para. (f) of the above quoted chapter contains full particulars of the dams and barrages.

### **3. River Transport Firms and their Steamers, etc.**

The two principal firms with steamers playing on the River Nile are (a) Thos. Cook and Son, Ltd., and (b) The Anglo-American Nile and Tourist Company. Both these firms have their engineering shops at Shubra, the northern suburb of Cairo.

Details of the steamers, etc., of these two firms are given at the end of this chapter.

(a) Messrs. Thos. Cook & Son, Ltd.

Name of Steamer.	Length (feet).	Breadth (feet).	Horse- power.	Approx. Mean Speed (m.p.h.).	Capacity.		Loaded Draught (feet).	Fuel.
					Passenger.	Stores.		
" Arabia " .. .. .	236	32	500	8	80	Nil	4	Coal
" Egypt " .. .. .	230	32	500	8	80	"	4	"
" Sudan " .. .. .	236	32	500	8	80	"	4	"
" Rosetta " .. .. .	231	30	500	8	60	"	4	"
" Damietta " .. .. .	231	30	500	8	60	"	4	"
" Delta " .. .. .	189	27	400	8	44	"	3½	"
" Chonsu " .. .. .	125	18	130	7	12	"	3½	"
" Scarab " .. .. .	90	17	90	6	6	"	3½	"
" Fostat " .. .. .	100	22	185	7	10	"	3½	"
" Memnon " .. .. .	131	19	150	7	12	"	3½	"
" Seti " .. .. .	100	18	120	6	8	"	3½	"
" Conas " .. .. .	110	18	130	7	11	"	3½	"
" Seraphis " .. .. .	125	18	130	7	13	"	3½	"
" Nitocris " .. .. .	103	15	120	8	40	"	3	"
					(No cabins).			
" Thebes " .. .. .	150	26	300	6	44	"	3½	"
" Sebek " .. .. .	45	—	40	7	12	"	3	"
					(No cabins).			
" Thosco " (tug) .. .. .	54	14	180	10	—	—	4½	Diesel engine.

(b) The Anglo-American Nile and Tourist Company

Name of Vessel.	Type.	Length (feet).	Breadth (feet).	Horse- power.	Approx. Mean Speed (m.p.h.).	Capacity.		Draught.	Fuel.
						Passenger.	Stores.		
							tons.	ft. in.	
" Britannia " ..	Stern-wheel steamer	200	28	500	11	70	40	4 0	Coal
" Victoria " ..	"	200	28	500	11	70	40	4 0	"
" Puritan " ..	"	198	28	300	10	70	30	3 6	"
" Mayflower " ..	"	156	24	300	10	40	25	3 6	"
" Nubia " ..	"	148	25	300	10	40	25	3 6	"
" Indiana " ..	"	116	18	200	7.5	10	15	3 0	"
" Niagara " ..	"	110	18	200	7.5	10	15	3 0	"
" Felix " ..	Steam screw passenger boat.	90	17	100	6	250	—	3 0	"
" Rod El Farag " ..	"	90	17	100	6	250	—	3 0	"
" Mabrouk " ..	"	96	18	110	7	280	—	3 5	"
" Fellah " ..	"	96	18	110	7	280	—	3 5	"
" Birchams " ..	"	96	18	130	7.5	320	—	3 5	"
" Maamoura " ..	"	90	19	130	7.5	290	—	4 0	"
" Aboul Ela " ..	"	100	19½	130	7.5	360	—	3 5	"
" Sourour " ..	"	96	18	130	7.5	280	—	3 5	"
" Nouzha " ..	"	96	18	130	7.5	280	—	3 5	"

(b) The Anglo-American Nile and Tourist Company—*contd.*

Name of Vessel.	Type.	Length (feet).	Breadth (feet).	Horse- power.	Approx. Mean Speed (m.p.h.).	Capacity.		Draft.	Fuel.
						Passenger.	Stores.		
" Cattawi "	.. Steam screw passenger boat.	96	18	130	7.5	280	tons. —	ft. in. 3 5	Coal
" Baraka " ..	.. "	96	18	130	7.5	280	—	3 5	"
" Katkout "	.. "	70½	15	110	6	180	—	3 5	"
" Corsair "	.. Motor launch	40	9	35	10	30	—	1 10	Paraffin
" Wanderer "	.. "	30	7	14	8	12	—	2 4	"
" Wizard " ..	.. "	26	6	14	9	8	—	2 0	"
" Active " ..	.. Steam tug	60	10	90	9	—	—	3 9	Coal
" Arrow " ..	.. "	57	10	90	9	—	—	3 9	"
" Atlanta "	.. "	62	10	90	9	—	—	3 9	"

## CHAPTER XIII

## RAILWAYS

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## RAILWAYS

*N.B.*—A map of the Railways of Egypt is enclosed in the pocket at the end of this book (Map No. 8). The Western Desert Line does not appear on Map No. 8. For reference to this line, *see* Map No. 1.

Matters of general interest are dealt with in paras. 1-5.

More technical details are given in paras. 6-16 and Tables 1-12, at the end of this chapter.

### 1. History

Egypt was one of the early countries and certainly the first in Africa to adopt railway transport. It owes its inception to the desire for an "overland route" to India, and construction was commenced under British guidance in 1851, with a line from Alexandria to Cairo on the standard (4 ft. 8½ in.) gauge. This was completed 2 years later. From Cairo, the line was carried on to Suez in 1858, thus completing the "overland route."

This was followed by the construction of a line southwards from Cairo following the Nile. In the meantime, the Suez Canal was completed in 1868. The necessity for the old "overland route" thus disappeared, but the value of railways to the country had by then been realised and construction of other lines proceeded apace.

The main line reached Ismailia in 1867 and was extended to Suez, via Nefisha, in 1870. A narrow gauge line was constructed from Ismailia to Port Said in 1891 and converted to standard gauge in 1904. The direct Cairo-Suez line was dismantled in 1879, but was relaid practically on the same alignment and completed in 1932.

By 1898, most of the important provincial towns in the Delta had been connected, and Luxor had been reached to the south. The Sudan Campaign necessitated an extension from Luxor, and a military line on the 3 ft. 6 in. gauge was completed as far as Aswan, connecting there with an existing military line, 11 miles long, to Shellal. It was not until 1926 that the section Luxor-Shellal was converted to 4 ft. 8½ in. gauge.

During the Great War, rail connection between Egypt and Palestine became necessary, and in 1916 a standard gauge line running east from Qantara was begun. Until 1917, rolling stock was ferried across the canal, but the demand for quicker transport between the two countries led to the building of a swing bridge across the canal at a point 3 miles north of Qantara. It remained in operation

till 1921, when it was removed at the request of the Suez Canal Company. Connection is now maintained by means of a wagon ferry at Qantara (*see* para. 9).

The Maryut line, serving the Western Desert from Alexandria was opened as far as Fuka in 1930, and as far as Mersa Matruh in 1936. (*See* para. 13.)

## 2. General

A reference to Map No. 8 will show that Egypt, so far as the populated areas are concerned, is well served with railways. All towns are connected and practically every village is within a few miles of a railway.

The following systems exist in the country :—

- (i) The Egyptian State Railways.
- (ii) The Delta Light Railways.
- (iii) Chemins de Fer de la Basse-Egypte.
- (iv) The Faiyum Light Railways.
- (v) The Khatatba-Wadi Natrun Railway.
- (vi) The Palestine Railways (from Qantara to Rafa).

The first, as its name implies, is owned by the Government. Nos. (ii) to (v) are privately owned. No. (vi) is under the control of the Palestine Railways Administration.

The Egyptian State Railways are the most important system in the country and it is with them that this chapter is primarily concerned. The other lines are dealt with generally in para. 15.

In addition to the E.S.R. proper, which was originally constructed by the Government, certain other lines, which were built by private enterprise, have subsequently been absorbed into the State Railway system. They are :—

- (i) The Western Oasis Line.
- (ii) The Auxiliary Railways of Upper Egypt.

These are referred to in para. 14.

The total route mileage of the E.S.R. is 1,854 miles of standard (4 ft. 8½ in.) gauge and 121 miles of narrow (2 ft. 6 in.) gauge. Of the standard gauge, 510 miles are double line, the main double line sections being :—

Cairo-Benha-Tanta-Alexandria.  
Cairo-Ismailia.  
Cairo-Assiut.

Railway construction in Egypt is easy and economical, almost the only major works being the Nile bridges; heavy grades are practically non-existent and curves are easy.

Owing to financial conditions, little has been done recently in the way of new construction, with the exception of the construction of the direct line to Suez from Cairo and the extension of the Maryut Line from Fuka to Mersa Matruh, but various schemes of development are under consideration. These are mentioned in para. 15.

The Southern terminus of the line is at Shellal. While rail connection with the Sudan Railways at Wadi Halfa would be most desirable, the intervening country is desert, with innumerable valleys, separated from each other by granite ridges running at right angles to any railway route, following closely the line of the river. As it is, connection between the two systems is maintained by a steamer service on the Nile, a distance of 210 miles. The feasibility of joining the two systems was mentioned in Lord Cromer's report and, largely for diplomatic reasons, was dismissed as impracticable.

No survey has been done of the country a few miles westward of the Nile, but reconnaissance has shown that a location following this route might be possible.

The Cairo-Suez direct line was relaid between 1929 and 1932, and opened to goods traffic at the end of 1934 and to passenger traffic early in 1935. Goods traffic was discontinued over the line at the end of 1935.

The reasons for reconstruction of the line are obscure. It is unjustified economically, but as it has a potential military value, details are given separately in para. 12.

The extension of the Maryut Line from Fuka to Mersa Matruh was accelerated by the recent emergency. Construction began on 1st January, 1936, and the extension was opened to passenger and goods traffic on 7th April, 1936. As the extension of the Western Desert line also has considerable military significance, it is discussed in more detail in para. 13.

### 3. Organization

Many changes have occurred in the past in the form of Government control of the E.S.R., and the existing system is, at present, the subject of political controversy, and is liable to be changed at any time.

Control is at present exercised by a Board of Directors, consisting of the Minister of Communications as President, the Ministers of Finance and Public Works, the Railway General Manager and seven other Government officials. The General Manager exercises authority and has responsibilities under powers delegated to him by the Board.

The organization of the E.S.R. is on the departmental system, similar to that of many other railways. The scheme of organization is designed to make each service a self-contained department. The head of each department has direct responsibility to the General Manager for the efficiency of his own department.

There are seven main departments, as follows :—

General Management.  
Ways and Works.  
Locomotive and Carriage.  
Traffic.  
Audit and Accounts.  
Stores.  
Medical.

The first four are the departments with which the military authorities are primarily concerned. The following is an outline of their functions :—

(a) *General Management*

In addition to his responsibilities regarding the other departments, the General Manager has direct authority over legal, personnel, and publicity matters. The offices for stores purchase and inspection are also in his department.

(b) *Ways and Works*

This is the department which deals with the civil side of engineering, as distinct from the mechanical side. The head is the Chief Engineer.

The department deals with all new construction of track, buildings, bridges and signals and their maintenance. Land questions are also dealt with by it.

For the maintenance of existing track and structures, the system is divided into four divisions and eleven districts, under four divisional engineers stationed at Alexandria, Zagazig, Cairo and Minia, each district being in the charge of a District Engineer.

(c) *Locomotive and Carriage*

This has two distinct sections : (i) Running and (ii) Workshops, direction of both being by the Chief Mechanical Engineer.

The former section maintains in running order all locomotives and rolling stock through four Divisional Superintendents, and is responsible for the organization of the actual working of locomotives required for train services, and the control of drivers, firemen and running shed staff.

The workshops section undertakes the building, re-building, overhaul, and heavy repairs of locomotives and rolling stock.

The maintenance of all electrical equipment comes under the charge of the Chief Electrical Engineer, directly responsible to the Chief Mechanical Engineer.

(d) *Traffic*

This department deals with both passenger and goods working and all commercial relations between the State Railways and their customers.

It is responsible for the regulation and safety of the train services, station service, the working of the signal services, the booking and control of passengers, and the despatch and delivery of goods.

For working purposes, the line is divided into five divisions, each controlled by a Divisional Superintendent, directly responsible to the Traffic Manager, who is the head of the department.

What may be termed the commercial, as distinct from the operating side, is controlled by a Goods Manager, under the Traffic Manager. The Goods Manager is also responsible for the distribution of wagons and their economical loading.

The most noticeable characteristic of the Traffic Department is its centralization and lack of elasticity. All arrangements asked for, down to a request for a shunting engine to move two coaches from Moascar to Ismailia, are referred to the Head Office in Cairo for a decision.

#### 4. Military Considerations

(a) *Most Important Lines*

They are clearly (i), those connecting the capital with the ports and linking up the peace-time garrisons. The sections concerned are :—

Cairo–Benha–Ismailia–Port Said.

Cairo–Benha–Tanta–Alexandria.

Ismailia–Nefisha–Suez.

Cairo–Assiut–Aswan–Shellal.

Cairo–Suez (direct line).

Table 1 shows the distance by rail between the important stations on these sections and the journey times by express trains.

Details of bridges and stations are given in Tables 2 to 4, and discussed in paras. 9 and 10.

(ii) Qantara-Rafa (Palestine Railways). The through line to Palestine running through Egyptian Territory (Sinai). *See* para. 15.

(iii) Alexandria-Fuka-Mersa Matruh.

This line is important as it would be the main line of communication for any force operating in the Western Desert. (*See* para. 13.)

#### *(b) Civil Disturbances*

The network of railways in the Delta provides a rapid means of transporting troops to centres of disturbances, and their subsequent maintenance. No point is more than a few hours run by rail from military garrisons.

The workshops of the E.S.R. and the private railways are distributed fairly evenly over the Delta. Consequently, in an emergency, the facilities they provide might be used for repairing tanks, armoured cars and M.T. Prolonged use, however, is to be discouraged, as this would seriously interfere with the working of the railways.

As the railways offer an obvious field for sabotage, protection commitments are heavy. The numerous bridges are the most vulnerable, but actual destruction is unlikely, owing to the inexperience of possible rioters and their lack of resources for bridge demolition. The mechanism of the swing bridges (*see* para. 9), however, is likely to be attacked. As an example, in the 1919 riots, the mechanism was destroyed of the Shubra Swing Bridge which carries the main Cairo-Benहा line over the Ismailia Canal, with the result that this important channel of supply to Cairo was cut off for a week.

Sabotage is more likely to take the form of minor damage to the permanent way, signalling system, engine watering plant and other equipment. This type of damage is usually easy to repair, but causes great inconvenience and, if sufficiently extensive and well planned, might cause complete disorganization of the railway system.

#### *(c) Railways as through L. of C.*

In the event of the Suez Canal route being blocked, the railways provide an alternative L. of C. to the Sudan, but the gap in rail communication between Shellal and Wadi Halfa is a great disadvantage to the use of this route.

*(d) Assistance from Railway Authorities*

The characteristics of the railway personnel are discussed in para 4 (e).

They possess considerable experience of troop moves and, under normal conditions, these are carried out efficiently. In emergency, however, their inability to cope rapidly with the unexpected, together with a tendency towards undue optimism on paper among senior officials and insufficient direct supervision, is likely to result in the necessity of augmenting the railway staff with British personnel drawn from the military forces.

The question of military traffic is referred to in para. 6.

*(e) Personnel*

The total number of personnel employed by the Egyptian State Railways is, in round figures, 32,800. Of this, only about 50 are British.

Most of the higher positions are held by British officials, though a large number are occupied by Egyptians. For example, the General Manager is an Egyptian, while his deputy is British. The Chief Engineer is Egyptian and his deputy and two chief assistants are British, but the District Engineers are all Egyptian. In the Traffic Department, the Traffic and Goods Managers are British, and of the five Divisional Traffic Superintendents, three are British. In the Mechanical Department, practically all the posts down to Chief Shop Foremen are British.

The characteristics of the Egyptian railway official appear to be a good technical education and knowledge of his work, and the capacity to carry it out efficiently, provided it is of a routine nature. He lacks initiative and powers of improvisation, and has the tendency to avoid responsibility.

As regards the labouring grades, their manual dexterity is of a fair standard, but they need to be continuously and closely supervised.

## **5. Military Liaison with the E.S.R.**

The British heads or deputy heads of departments have proved themselves to be highly co-operative and ready to look after the interests of military and R.A.F. traffic. The Way and Works Department have provided additional railway facilities at very short notice. It is highly important from the military point of view that this atmosphere of understanding should be maintained.

The ordering of special trains should, in every case, be done through the Traffic Manager's office in Cairo.

The reservation of one or two coaches on a regular passenger train can be done through the Divisional Traffic Superintendent of the division from which the train originates.

All reservations should be confirmed in writing.

Heads of departments are normally available at their offices between 0900 hours and 1300 hours, on all days except Fridays.

Throughout the day and night there is always a Traffic Assistant on duty at Cairo Station offices, who may or may not be able to speak English.

Small reservations or the ordering of goods wagons may be done through this official. More important last-minute problems should be dealt with by getting in touch with a more senior traffic official at his private house.

## 6. Traffic

Administration is divided between the four divisions of Cairo, Alexandria, Lower Egypt and Upper Egypt.

Cairo division works the express service of Lower Egypt and the suburban traffic of Cairo.

Alexandria division is responsible for working the goods services of Lower Egypt and the suburban lines of Alexandria, together with the marshalling of all goods trains.

The Lower Egypt division works the slow passenger service over the whole of Lower Egypt.

The Upper Egypt division works the entire express and goods services between Cairo and Aswan.

### (a) *Train Control*

A train control office is located at Assiut for the regulation of traffic from Mallawi, southwards. This office is equipped with the western electric system of telephone control. All trains on other sections are worked on the time table and block method, with the electric train staff for use on single lines.

### (b) *Speeds*

The maximum permissible speed is 80 km. per hour on the main lines Cairo-Port Said and Cairo-Alexandria. Between Ismailia and Suez, it is 70 km. per hour. From

Cairo to Shellal, the maximum speed varies. It is 80 km. per hour between Cairo and Qena, 70 km. per hour between Qena and Luxor, and 60 km. per hour between Luxor and Shellal.

(c) *Junctions*

Benha is the most important junction from a military standpoint, since the main double lines to Cairo, Alexandria and Port Said, radiate from it. Several important bridges are also located in the vicinity. In the event of an emergency preventing the use of Benha, the following alternative routes could be used from Cairo :—

*To Port Said.*

- (i) Cairo—Qaliub—Shebin el Qanatir—Zagazig.
- (ii) Cairo—Mataria—Shebin el Qanatir—Zagazig.
- (iii) Cairo—Ein Shems—Suez.

*To Alexandria.*

- (i) Cairo—Qaliub—Minuf—Tanta.
- (ii) Cairo—Qaliub—Minuf—Kafr-el-Zaiyat.
- (iii) Cairo—Manashi—Khatatba—Tel el Barud.

All the above routes are single line. They can easily be brought into operation and no exceptional load restrictions exist on them (with the exception of the line Cairo—Ein Shems—Suez. See para. 12).

(d) *Passenger Services*

Between Cairo and Alexandria, eleven passenger trains are normally run each way daily. Of these, six are classed as express trains.

Between Cairo and Port Said, three passenger trains are run each way daily ; Cairo to Port Said all three express, and Port Said to Cairo two express and one semi-express.

From Ismailia to Suez, three stopping passenger trains are run each way daily.

There is only one through passenger train a day between Cairo and Shellal.

On all the above sections, numerous intermediate services are run between the more important stations.

(e) *Goods Services*

There are a large number of goods trains run on the above sections. A few of them are regular services, but the majority are conditional services, *i.e.*, timings are allotted for them

in the time-table, but they are only run if sufficient traffic offers. There is only one regular goods train daily between Port Said and Ismailia.

The principal commodities carried are—

*Export.*—Cotton, cotton seed, cereals, onions, salt, sugar, eggs.

*Import.*—Coal, chemical manure, timber, tobacco, piece-goods, machinery, metals, petroleum and other oils.

(f) *Marshalling Yards*

There are 17 marshalling yards distributed over the system. The majority can deal with some 200 to 300 wagons daily. The following are the principal yards with their maximum daily capacity :—

Cairo .. .. .	2,800
Gabbary .. .. .	2,200
Aswan .. .. .	1,800
Minya .. .. .	950
Tanta .. .. .	925
Zagazig .. .. .	700

The ports of Port Said and Suez can deal with 270 and 530 wagons respectively.

The principal stabling sidings for coaching stock are at Cairo, Alexandria, Port Said, Suez, Benha, Tanta, Assiut, Sohag, Luxor and Aswan.

(g) *Train Loads*

(i) The permissible loads vary with the class of engine and the scheduled speed. For passenger trains on the main line this is 75 km. per hour and for goods or mixed trains it is 60 km. per hour.

The average size of regular civilian trains are :—

Passenger trains ..	12 bogies with a total tare of 480 tons.
Goods trains ..	50 (equivalent) 10-ton wagons with a gross load of 700 tons.

(ii) For purposes of assessing the loads of trains, the different types of rolling stock are referred to in terms of equivalent 10-ton box wagons. One 10-ton box wagon is the " railway unit " of load.

Thus :—

One bogie coach is equivalent to 3 units, mixed or goods train timing.

One bogie coach is equivalent to 2 units, passenger train timing.

One 6-wheeled passenger coach to 2 units.

One 30-ton flat truck to  $2\frac{1}{2}$  units.

One 30-ton goods wagon to  $2\frac{1}{2}$  units.

One 15-ton flat truck to  $1\frac{1}{2}$  units.

One goods brake van to 1 unit.

One 2,000-gallon water tank to 2 units.

(iii) The maximum allowable size for special trains on the main lines is as follows :—

Passenger trains on a 75 Km. timing—13 bogies (26 units).

Passenger trains on a 60 Km. timing—20 bogies (60 units).

Mixed trains or goods trains—80 equivalent units.

(iv) On the Maryut Line between Alexandria and Mersa Matruh, all trains are at present run to a 30 Km. per hour schedule and loads are restricted to 45 equivalent 10-ton units, which must include water tanks. (Five 2,000-gallon water tanks are taken with each train).

#### (h) *Military Traffic*

Under normal working conditions, *i.e.*, without the curtailment of other traffic (except possibly that of local passenger trains), the following timings may be expected to be available for military traffic daily :—

Cairo—Alexandria	.. ..	10 timings each way.
Cairo—Port Said	.. ..	5 timings each way.
Ismailia—Suez	.. ..	5 timings each way.
Cairo—Shellal	.. ..	5 timings each way.
Alexandria—Mersa Matruh	.. ..	3 timings each way.

These figures show that the "running" capacity of the system is high. The actual number of troop trains which could be run would be determined by the rolling stock available.

Without curtailing normal civilian traffic, about 70 bogie third class coaches can be made available for military traffic. The ruling factor, however, in moving units by rail, together with their transport, is the availability of flat trucks. During the cotton season, for example, flat trucks are scarce and distributed over the system; at some other times they can be concentrated where required at short notice.

The Traffic Manager, E.S.R., has given the following guarantee :—

“Thirty flat trucks will be available anywhere in the Delta within 24 hours of demand and a further 30 will be available within 48 hours of demand.”

(j) *Loading to Rail of Personnel, Stores and Vehicles*

(i) *Third Class Bogie Coaches.*

Day journey .. 65 to 70 men with packs and two kit bags each.  
70 to 75 men with one kit bag each and remainder in a brake van.  
Night journey .. 60 to 65 men with packs and two kit bags each.  
65 to 70 men with one kit bag each and remainder in a brake van.

(ii) *10-ton Box Wagons.*

	<i>Tons.</i>
Personal baggage .. . . .	8 to 9
Regimental baggage .. . . .	6 to 7
Supplies .. . . .	7 to 8
Stores (Ordnance and R.E.) .. . . .	6 to 7
Forage .. . . .	4 to 5

*Ammunition—*

With escort in same wagon .. . . . 4 to 5  
With escort in brake van next to wagon 8 to 10

(iii) *15-ton Flat Truck (length, 9·75 metres).*

*Horse Transport—*

3 L.G.S. wagons.  
2 G.S. wagons.  
3 Cookers.  
2 Water carts.

*Mechanical Transport—*

1 Armoured car (Lanchester) and 2-seater car.  
2 Light tanks.  
6 Austin Seven cars (side loaded).  
2 13-pdr. guns and two limbers.  
1 18-pdr. or 4·5-in. howitzer and one limber.  
3 Ammunition trailers.  
2 Dragons.  
1 3-ton lorry and one 4-seater or 2-seater car or 12-cwt. van.  
1 30-cwt. lorry and one 4-seater or 2-seater car or 12-cwt. van.  
1 3-ton or 30-cwt. lorry and one water tank.  
1 Technical lorry and one 2-seater car.

- 2 4-wheeled motor ambulances.
- 1 6-wheeled ambulance and one 4-seater or 2-seater car.
- 2 12-cwt. vans.
- (iv) 30-ton Flat Truck (length, 10·5 metres).  
1 Medium tank and one light tank.
- (v) Animal Truck.  
8-10 Animals.

(k) *Military Trains*

The following shows the stock required for certain units to move by rail with armoured vehicles and transport. The number of special trains required for each unit will depend on whether the journey is entirely over main lines or partly over the main line and partly over the Maryut Line :—

(i) *Cavalry Regiment (Light Cars).*

Strength—

- 26 Officers.
- 496 Other ranks.
- 23 30-cwt. lorries.
- 71 15-cwt. Morris trucks.
- 4 15-cwt. vans, W/T.
- 1 Car, 4-seater.
- 10 Cars, 2-seater.
- 10 Motor cycles.

Stocks required—

- 8 Bogie coaches.
- 1 Passenger brake van.
- 53 15-ton flat trucks.
- 1 Goods brake.

Total railway units = 107½.

(ii) *Armoured Car Cavalry Regiment.*

Strength—

- 21 Officers.
- 393 Other ranks.
- 43 Armoured cars (Rolls Royce).
- 8 3-ton lorries.
- 11 30-cwt. lorries.
- 2 30-cwt. lorries, W/T.
- 1 4-seater car.
- 16 2-seater cars.
- 4 Water trailers.
- 32 Motor cycles.

## Stock required—

- 7 Bogie coaches.
- 1 Passenger brake van.
- 64 15-ton flat trucks.
- 1 Goods brake.

Total railway units = 121.

(iii) *Tank Battalion (Mixed)*.—One medium company and two light companies.

## Strength—

- 24 Officers.
- 300 Other ranks.
- 2 Water trailers.
- 2 Kitchen trailers.
- 6 3-ton lorries.
- 6 30-cwt. lorries.
- 1 15-cwt. van.
- 3 4-seater cars.
- 4 2-seater cars.
- 13 Medium tanks.
- 42 Light tanks.
- 1 Light aid trailer.
- 11 Motor cycles.

## Stock required—

- 6 Bogie coaches.
- 2 Passenger brake vans.
- 13 30-ton flat trucks.
- 27 15-ton flat trucks.
- 1 Goods brake van.

Total railway units = 98.

(iv) *Mechanized Field Brigade, R.A.*

## Strength—

- 24 Officers.
- 442 Other ranks.
- 32 Dragons.
- 28 30-cwt. lorries.
- 6 3-ton lorries.
- 7 15-cwt. vans.
- 11 4-wheel trailers.
- 4 2-wheel trailers.
- 1 4-seater car (Staff).
- 15 Cars, Austin 10.
- 12 Cars, 2-seater.
- 7 Guns, 18-pdr.
- 7 Guns, 4.5-in. howitzer.
- 30 Limbers.

## Stock required—

- 8 Bogie coaches.
- 2 Passenger brake vans.
- 68 15-ton flat trucks.
- 6 10-ton box wagons.
- 1 Goods brake van.
- Total railway units = 139.

(v) *Infantry Battalion with Motor Transport.*

## Strength—

- 26 Officers.
- 879 Other ranks.
- 2 30-cwt. lorries.
- 12 15-cwt. trucks.
- 4 2-seater cars.
- 2 Water trailers.
- 6 Motor cycles.

## Stock required—

- 14 Bogie coaches.
- 2 Passenger brake vans.
- 4 10-ton box wagons.
- 9 15-ton flat trucks.
- 1 Goods brake van.
- Total railway units =  $66\frac{1}{2}$ .

(vi) *Motorized Lifted Infantry Battalion.*

## Strength—

The strength of the Infantry Battalion is taken to be the same as in (v) above. To this total is added a Lifting Company, R.A.S.C., strength as follows :—

- 1 Officer.
- 280 Other ranks.
- 73 30-cwt. lorries.
- 50 15-cwt. trucks.
- 18 2-seater cars.
- 3 4-seater cars.
- 40 Motor cycles.

Total stock required. (For Infantry Battalion and Lifting Company, R.A.S.C.)—

- 18 Bogie coaches.
- 1 Passenger brake van.
- 31 15-ton flat trucks.
- 1 Goods brake van.
- Total railway units =  $178\frac{1}{2}$ .

(vii) *Field Company, R.E., with Motor Transport.*

## Strength—

- 4 Officers.
- 130 Other ranks.
- 8 30-cwt. lorries.
- 1 3-ton lorry.
- 1 4-seater car.
- 3 2-seater cars.
- 1 Kitchen trailer.
- 1 Water trailer.
- 5 Motor cycles.

## Stock required—

- 3 Bogie coaches.
- 1 Passenger brake van.
- 9 15-ton flat trucks.
- 1 Goods brake van.

Total railway units =  $26\frac{1}{2}$ .(viii) *13-pdr. Battery, R.H.A.*

## Strength—

- 6 Officers.
- 157 Other ranks.
- 3 30-cwt. lorries.
- 7 2-seater cars.
- 12 Dragons.
- 6 Guns, 13-pdr.
- 6 Gun limbers.
- 3 Ammunition trailers.
- 4 Motor cycles.

## Stocks required—

- 3 Bogie coaches.
- Passenger brake van.
- 13 15-ton flat trucks.
- 1 Goods brake van.

Total railway units =  $32\frac{1}{2}$ .

(l) Trains required for other mechanized units can be worked out from the data given in sub-para. (j) above.

(m) As it is often necessary to make an estimate of the length of trains with a view to ascertaining the siding accommodation required, the following figures give approximate lengths over buffers, of the rolling stock mentioned above :—

Passenger coaches	..	..	..	19 metres.
Animal trucks	}	..	..	8 metres.
10-ton box wagons				
Brake vans				
15-ton flat trucks	..	..	..	11 metres.
30-ton flat trucks	..	..	..	$11\frac{1}{2}$ metres.

## 7. Signalling

The signalling system employed is the absolute block, following English practice. A steady programme has been followed for interlocking the whole system, and the only sections which are not interlocked yet are—

Mansura-Damietta.

Mansura-Rosetta.

Maryut Line.

The Auxiliary Lines of Upper Egypt.

Mehallet Roh-Damanhour.

The interlocking apparatus installed is that made by the Westinghouse Brake and Saxby Signal Company, Ltd.

The signalling in general is mechanical, both Tyers and Sykes block instruments being used; but in Cairo, the Westinghouse electro-pneumatic system is in operation.

## 8. Permanent Way

### (a) *Description of Track*

The main line track consists of Vignole (flat bottomed) rails weighing either 46 Kg. per metre ( $92\frac{1}{2}$  lb. per yard), or 47 Kg. per metre ( $94\frac{3}{4}$  lb. per yard). The latter has now been adopted as the standard rail. The rails are carried on bearing plates, which are coach screwed to wooden sleepers. Two screws per bearing plate are used, except on curves and turnouts, where four screws are used. The rails are connected by 6-hole deep angle fishplates resting on the joint sleepers.

A lighter standard of construction is adopted for branch lines, the rails averaging about 37 Kg. per metre.

About 250 miles of track has been laid with trough pattern steel sleepers. The remainder of the system is sleepered with wooden sleepers from Karamania in Turkey and recently Australian Jarrah wood has been used fairly extensively.

Jarrah is slightly more expensive than Karamania wood and is only used when the latter cannot be obtained owing to Turkish restrictions on the export of timber.

Karamania sleepers are of good timber and as there are no white ants or other insects in the country to affect them and the climatic conditions are favourable, they are not creosoted. They have a life of fifteen to twenty years.

The track is ballasted with flint gravel, of which there are large quantities in the country, the principal quarries being at Abu Hammad and Khatatba in Lower Egypt and Sirag in Upper Egypt. A small amount of broken basalt ballast is used from Abu Zabal. This is sharp and extremely good but its price is almost prohibitive.

*(b) Shops and Stores*

The central permanent way shops are situated at Cairo, where points and crossings and other track fittings are made. These shops are, at the moment, in the process of being transferred to Abbassia. Rails and other raw material are imported from Europe.

Sleepers are mechanically adzed and bored at these shops by an installation capable of dealing with more than 3,000 sleepers a day. The shops could make turnouts, if required, at the rate of one a day, and they also undertake the manufacture of foot-bridges, roof trusses and structural work generally.

The largest permanent way stores are situated at Gabbary (Alexandria) and Cairo. There are smaller depôts at the bigger stations such as Tanta, Zagazig, Benha, Wasta and Assiut. Stocks fluctuate considerably. At the smaller depôts only a kilometre or so of track is likely to be normally available.

*(c) Earthwork*

There is very little heavy earthwork. Occasionally there is a cutting through a sandhill, but the country traversed is generally very flat. Where the country is liable to floods from the Nile, the line is carried on an embankment above normal flood level, and in Upper Egypt it is usually stone pitched, in addition.

*(d) Curves and Gradients*

As mentioned in para. 2, heavy gradients are practically non-existent and curves are easy. Gradients of 1/150 are rare. Those of 1/200 are more common, but only extend for short distances. The sharpest curve on the main lines is 300 metres radius (5.8 degrees).

*(e) Turnouts*

One in eight and one in ten turnouts are adopted for both main lines and sidings, the former with a lead of 20.5 metres and the latter 25.5 metres.

*(f) Loading Gauge*

A loading and structure gauge diagram is attached (after page 334).

Only two types of vehicle on the establishment of units at present in Egypt have been found to be "out of gauge loads," namely, W/T lorries and one pattern of Ordnance Workshop lorry. In both cases partial deflation of the tyres is all that has proved necessary. Care must be taken, however, to check the dimensions of all new pattern vehicles arriving in the country.

*(g) Classification of Track*

The track is classified into Categories I, II, IV, V and VI, depending on the axle loads of the locomotives which are permitted to run over it. These loads are as follows :—

Category.	Maximum Axle Load.		
	Tons.	Cwts.	Qrs.
I .. .. .	19	2	3
II .. .. .	19	2	3
IV .. .. .	17	2	0
V .. .. .	15	6	0
VI .. .. .	14	14	0

Locomotives are similarly classed (*see* Table 6).

It will be noted that Categories I and II have the same axle loads. Category I applies only to the marshalling yards at Cairo and Gabbary, where a particularly heavy type of locomotive is used for marshalling purposes, with a closer wheel spacing and therefore greater intensity of loading. All main lines, with the exception of that south of Sohag, are of Category II.

The section south of Sohag is of Category IV, due to the fact that the bridge at Nag Hamadi has not yet been strengthened or rebuilt (*see* para. 9).

*(h) Maintenance*

As mentioned in para 3, the system is divided into four divisions and 11 districts, for maintenance purposes. These districts are Cairo, Imbaba, Alexandria, Gabbary, Tanta, Zagazig, Mansura, Ismailia, Minia, Sohag and Luxor.

Each Divisional Engineer has under him an Assistant Divisional Engineer and two or more District Engineers.

Each District Engineer has under him several Sectional Assistant Engineers. In addition, he has under him a Chief Permanent Way Inspector, who controls a number of Permanent Way Inspectors, the number varying according to the length of section. Generally speaking, a Permanent

Way Inspector has 80-100 km. of line to inspect, and the actual maintenance is carried out by Permanent way gangs, distributed in posts along the section. Posts are from 10-15 km. long for single line and 8-10 km. for double, and the gang strengths are based on an average of one man per km. of track.

## 9. Bridges

In a country like Egypt, dependent for its water supply on the Nile, with an intricate system of canals and drains, bridges are of great importance.

Those over the Nile, of which there are ten, and the larger canals, are all provided with opening spans.

Consideration of space precludes giving details of all the fixed and swing bridges in the country, so the details given in Tables 2 and 3 are confined to bridges on the lines of military importance. In the case of fixed bridges, only those having a span of 30 metres or over (*i.e.* bridges which may be looked upon as major bridges), are included. All swing bridges on these lines are shown.

### (a) *Construction of Bridges*

The general form of construction consists of steel plate or lattice girders of the trough or deck type, supported on masonry piers and abutments. Foundations consist of concrete filled caissons in the case of the large bridges, and concrete or screw piles for the smaller ones.

Considerable progress has been made recently in the strengthening of the bridges to take the heaviest axle loads contemplated. All bridges can now take either Category I or II loads, except the bridge at Nag Hamadi, (*see* para. 8).

### (b) *Operation of Swing Bridges*

There is a total of 41 swing bridges on the system and they are all operated on the same principle, and by hand power, with the exception of the wedge-locking of Imbaba Bridge, which is operated by electricity.

The bridges are under the control of signal cabins and the mechanism is interlocked with the signals protecting the bridge. When these are in the "on" position and the section blocked, the bridge "key" can be withdrawn from the signal cabin. It is handed over to the Bridge Agent, who is responsible for the opening of the bridge. The bridge mechanism is unlocked with the key and the bridge swung by hand (usually about four men are required for this, who are permanently stationed at the bridge).

The reverse procedure is adopted for closing the bridge, over which "line clear" cannot be given until the key is returned to the interlocking apparatus in the signal cabin.

Under normal conditions, the time taken from closing the line for service, to opening it again, is about one hour, of which for about half an hour the bridge is open to navigation. The remainder of the time is occupied in closing the line, handing the key to the Bridge Agent, opening the bridge and reversing the process.

The question of sabotage in connection with bridges is discussed in para. 4.

(c) *Waggon Ferry at Qantara*

This has been referred to in para. 1. It is composed of three 30-metre steel barges connected together and supporting two 16-metre bridge girders hinged at one end, bearing on hydraulic jacks and worked by steam machinery.

There are reinforced concrete approach bridges to it, and it is housed on the canal banks in reinforced concrete basins.

The ferry can take—

Four 10-ton trucks ; or

One passenger coach ; or

Three flat trucks, either 15 ton or 30 ton.

It is not normally used for passenger traffic.

During a period of nine consecutive days in September, 1936, the following numbers of equivalent 10-ton wagons were ferried :—

Average per day. From west to east, 93 ; from east to west, 37.

Maximum in one day. From west to east, 155 ; from east to west, 41.

During the latter the ferry worked throughout the 24 hours.

The time taken from commencement of loading on one side, to completion of loading at the other, assuming there is no delay in waiting for ships to pass through the canal, is about 30 minutes.

For through movement of troops between Egypt and Palestine, experience has shown that it is much quicker for the troops to detrain on one side, be transported across the canal on the passenger ferry and to entrain on the other side, than to be carried across the canal in their coaches by the wagon ferry. The latter should be used for transporting the baggage and vehicles trucks only.

## 10. Stations

Space does not permit of giving details of all the stations on the E.S.R. (there are over 200 on the main lines alone). Table 4 gives details of the more important of those on the lines of military importance, excluding the largest stations where facilities for troop movement are obviously ample.

Most of the smaller stations on the system are unsuitable, as they stand, for the rapid entrainment and detraining of troops accompanied by baggage and M.T. vehicles owing to the lack of end loading ramps, sufficient siding accommodation and approaches and circulating area for M.T. vehicles. Platforms also average only 150 metres in length, serve the main line only and if the station is on a bank, may necessitate shunting the train to enable troops to detrain in safety.

With the exception of the following smaller stations, Helmieh, Helwan and Abbassia in the Cairo area, Moascar-Ismailia, Fuka and Mersa Matruh on the Maryut line, and Sidi Gaber and Sidi Bishr on the Aboukir line, it can be assumed that all others will require at least the construction of an end loading ramp and an additional siding, with access for M.T. vehicles, to make them suitable for troop movements.

## 11. Locomotives and Rolling Stock

### (a) Workshops

The principal repair shops are situated as follows. Locomotive repair shop at Abu Zabal, roughly 17 miles from Cairo. This shop is new and has been designed on the most modern lines. The principal carriage repair shops are at Bulaq and wagon shops at Gabbary.

At Minia and Tanta, there are workshops attached to the large running sheds at these stations, where heavy repairs can be carried out.

The auxiliary railways are served by small shops at Minia (northern section) and Matana (southern section).

The E.S.R. are not favourably placed for the actual construction of locomotives and other stock, owing to the absence of raw material in the country. All locomotives and rolling stock and many spare parts are imported from abroad, mainly from the United Kingdom. A considerable amount of rebuilding is, however, undertaken.

*(b) Running Sheds*

Particulars of running sheds are given in Table 9.

The largest are the four locomotive divisional centres of Bulaq, Gabbary, Tanta and Minia. There, locomotives can be lifted and heavy repairs, including wheel turning, can be carried out. At the other sheds, only light running repairs can be executed.

*(c) Locomotives*

Table 6 gives details of the locomotives on the system.

Broadly speaking, these are allotted for train working as follows :—

- |   |  |
|---|--|
| (i) Main line passenger ..                                      | "Atlantic" (4-4-2) type.<br>Category II. Axle load<br>about 18½ tons.  |
| (ii) Suburban passenger ..                                      | 2-6-2 tank type.<br>Category II. Axle load<br>about 18 tons.   |
| (iii) Branch line passenger<br>and main line south<br>of Sohag. | 4-4-0 type.<br>Category IV. Axle load<br>about 17 tons. Also 2-4-0<br>type. Category VI. Axle<br>load about 14 tons. |
| (iv) Main line goods ..   | 2-6-0 type.<br>Category II. Axle load<br>about 18 tons.  |
| (v) Branch line goods and<br>main line south of<br>Sohag.       | 0-6-0 type.<br>Category VI. Axle load<br>about 14½ tons.   |

The classification of locomotives into categories, depending on the type of track on which they can run, has already been referred to in para. 8. It will be noted that the only Category I locomotives are the four 0-8-0 tank engines used for marshalling at Cairo and Gabbary.

All locomotives now purchased are of the most modern super-heated type and obsolete types are gradually being replaced. Engines which were laid by a few years ago owing to depression of traffic are now being re-conditioned and brought into service.

*(d) Steam Rail Cars and Diesel Cars*

Details of steam rail cars and Diesel cars are given in Table 7.

Diesel cars have been tried out in the waterless districts such as the Maryut line and the Cairo-Suez direct line, but up to the present no definite policy has been decided upon.

The introduction of Diesel locomotives for use in these districts is under consideration, both for goods and passenger work.

Schemes of electrification for the Cairo suburban lines have been evolved, but so far financial considerations have prevented their adoption.

(e) *Coal*

Welsh coal is now used exclusively, supplies being obtained from selected collieries. Coal is loaded into tenders by baskets, the capacity of which is assumed. This somewhat crude method of checking coal consumption is to be replaced by the introduction of proper coal handling plant, *i.e.*, weighed skips which are raised and tipped mechanically into tenders.

(f) *Water*

Details of watering stations are given in Table 5. These stations are also indicated on Map No. 8. They lie, on the average, about 20 to 25 miles apart.

The variety of sources of supply and types of pump used will be noted from the table.

Most of the water is, of course, obtained directly or indirectly from the Nile. The sediment is excessive during the flood season, but there are no injurious salts. It has not, therefore, been found necessary to instal water softening or purification plants.

Locomotive and station water supply for the Maryut line presents considerable difficulty, as all water must be carried by rail from Alexandria. A large reserve is under construction at Daba which will be supplied by water trains.

At the moment, no water can be supplied at Mersa Matruh for locomotive purposes (*see* para. 13), and it is improbable that the local water would be suitable for locomotive use without special treatment.

(g) *Rolling Stock*

Particulars of wagons are given in Table 7 and of coaching stock in Table 8.

Steel construction is now generally adopted, though there are a large number of wooden vehicles still in service. Steel stock is more durable and economical to maintain and, though hotter by day, is cooler by night.

The most common types of wagons are the 10-ton four-wheeler (open and closed), the 15-ton six-wheeler flat, and the 30-ton bogie (open and closed). The military loadings for these types are given in para. 6.

None of the wagons are vacuum fitted or piped. They are painted a dark red.

As regards coaching stock, the first and second class are well fitted and moderately comfortable. The third class stock, which is normally allotted for carrying troops, have bare wooden seats, and are uncomfortable, particularly for night journeys.

The seating capacity shown in Table 8 is for native civilians. For troops, this is reduced to make room for packs and kit bags. The average capacity is given in para. 6.

All coaching stock is vacuum fitted and electrically lighted on the Stones system. It is painted aluminium.

*(h) Cranes, Turntables, Triangles and Breakdown Trains*

The location of these, with some particulars, are given in Table 10.

## 12. Cairo-Suez Line

The construction of this line has already been referred to in para. 2.

It takes off from the Cairo-Shebin-el-Qanatir section at Ein Shems and runs eastward across the desert, connecting with the Ismailia-Suez section at Arbain. The total length of the line is 128.5 km. (80 miles).

*(a) Stations*

There are two intermediate stations, at El Rebeiqui (Kilometre 45), and at Gebel Iweibed (Kilometre 86). Each station is provided with station buildings and a crossing loop 300 metres long. Signalling is interlocked and cabins are provided at all stations.

*(b) Permanent Way*

The track follows the standard form of construction, with the exception that sand ballast is used at present. For the first 30 km. and the last 32½ km., standard 47 kg. rail is used. The remainder of the line is laid with old 8-metre and 12-metre 37 kg. rail. The 47 kg. rail used on this line is brittle and unsound.

There is a bridge over the Wadi Gafra at Kilometre 56.5, which consists of two spans of 5 metres each, supported on a central stone pier.

(c) *Earthwork*

Earthwork is somewhat heavier than on the rest of the system. It averages 6-7 metres in bank and cutting, with a maximum of 20 metres.

Gradients are also steeper. The maximum gradient is 1/100 for a distance of 5 km. From Ein Shems to El Rebeiqui, the average gradient is 1/250. Thence to Gebel Iweibed, it is undulating. From the latter station to Arbain, it averages 1/240. The summit of the line is at Kilometre 87 and the height of this point is 242 metres above canal level at Suez. The sharpest curve is 300 metres ( $5.8^\circ$ ), as for the main lines.

(d) *Water Supply*

Water is non-existent along the route and station tanks, therefore, have to be supplied with water transported by rail from Cairo and Suez.

(e) *Capacity and Limitations*

Owing to the bad state of the 47 kg. Vignole (G.K.N.) rails, goods traffic was suspended at the end of 1935. There is a permanent speed restriction of 30 km. per hour on the section Kilometre 30 to Kilometre 106, and the maximum permissible load for goods trains (when they run) is 60 10-ton wagons.

A banking engine is required for goods trains at both ends of the line, *i.e.*, from Ein Shems to El Rebeiqui and from Suez to Gebel Iweibed.

From an operating point of view the line, as equipped at present, will have a maximum capacity of about six trains a day each way, but it must be borne in mind that until the faulty lengths of 47 kg. rail are replaced, this figure could not be maintained.

(f) *Military Value*

The line offers an alternative and more direct route between Cairo and Suez than that through Ismailia. Since it crosses the desert, it is less liable to interference than the Ismailia line which passes through the Delta.

It will facilitate the movement of troops in the case of annual reliefs to India and, in the event of the British garrison being moved to the Canal Zone. The line enters

Cairo via Ein Shems and the Mataria line, hence, in the event of internal disturbances in Cairo, troops can be moved by rail to Abbassia or Helmieh direct from Suez, or from other stations in the Delta via Ein Shems, without the necessity arising for them to proceed through the streets of Cairo after detrainment.

### 13. The Maryut Line—Alexandria to Mersa Matruh

The extension of the line to Mersa Matruh has already been referred to in para. 2.

The line is single and takes off from Gabbary, Kilometre 0, and runs in a westerly direction roughly parallel with the coast and between 5 and 10 km. inland as far as Mersa Matruh, Kilometre 294.4.

From Gabbary to Fuka, Kilometre 217, the line is permanent. The section between Fuka and Mersa Matruh was built of second-hand reclaimable material and it is open to the Egyptian Government, either to leave it in position or lift it when the section is no longer required by the British authorities.

Work on the new extension was begun in January, 1936, and Mersa Matruh E.S.R. Station was opened to passenger and goods traffic in April, 1936.

At Mersa Matruh, a military railhead has been constructed. Details of sidings are given at Table 11. In addition, a single siding, length about 110 metres, has been constructed at Qasaba, Kilometre 275, to serve the R.A.F. landing ground.

#### (a) *Permanent Way*

The track follows the standard form of construction, but is sand ballasted throughout. The formation of approximately one-third of the new extension still requires widening.

The rails used for the line are mixed, and particularly in the section Fuka-Mersa Matruh, are very bad.

From Kilometre 56 to Kilometre 67, old bull head, 35 kg. rails are used, which are old and light and very bad. Sections of 30 kg. rails exist from Kilometre 195 to Kilometre 208, Kilometre 214 to 215, Kilometre 269 to 273, and Kilometre 301 to 303. This type of rail is far too light and some of it is old. The portion Kilometre 269 to 303 is constructed entirely of unsuitable rails. The lengths from Kilometre 274 to 283 and from Kilometre 291 to 301 being 38 kg. bull head rails recovered from the scrap heap.

(b) *Bridges and Culverts*

Between Gabbary and Fuka, the only bridge of any size is that over the Lake Maryut drain at Mex, Kilometre 5.75. This bridge consists of a single through truss of 54 metres span on masonry abutments. The clear width between main girders is 3.75 metres, and the clear height above R.L., 5 metres. In April, 1936, the bridge was strengthened to take Category II locomotives. The strengthening was carried out by the provision of two pile piers, each of eight 14-in. by 14-in. timber piles.

Between Fuka and Mersa Matruh there are four bridges :—

(i) At Kilometre 223½. A single 8-metre span of ten 20-in. by 8-in. R.S.Js. on reinforced concrete abutments.

(ii) At Kilometre 247. A single 5-metre span of eight 18-in. by 6-in. R.S.Js. on reinforced concrete abutments.

(iii) At Kilometre 257.8 and Kilometre 279. These are identical bridges each having two 7-metre spans. Central piers (1.2 metres) and abutments, of reinforced concrete. Each span has eight R.S.Js., 18 in. by 6 in.

Culverts are rare between Gabbary and Fuka, but in the new extension, numerous reinforced concrete pipe culverts exist, of varying diameters.

(c) *Gradients and Curves*

The ruling gradient over the permanent line between Alexandria and Fuka is 1/200. Between Fuka and Mersa Matruh, it was decided to grade the formation to a somewhat less degree, owing to the temporary nature of the line and the necessity for rapid construction. There are few grades in this section, however, steeper than 1/133, and these only for short distances. The worst hills from the locomotive point of view are :—

*In the Up Direction.*—(i) 5.7 km. of gradient 1/213 from Ikingi Maryut Station, Kilometre 26.3 to Kilometre 31.

(ii) A long grade between Kilometre 151 and Kilometre 172.2, with stretches of 6.5 km. of 1/556 and 3 km. of 1/323 and 2 km. of 1/111.

*In the Down Direction.*—The only serious grade is between Kilometre 207 and 197, which includes 5.2 km. of 1/400, followed by 4.5 km. of 1/256.

Between Alexandria and Fuka, curves are everywhere easy. The maximum curvature on the new extension is 4° 30' and this only for very short distances.

*(d) Water Supply*

Water supply on the Maryut Line is one of the most serious problems. No water is available west of Mex, either for locomotive or station purposes. Trains carry their own water tank wagons, and special water trains are run to supply station requirements.

At Daba, there is a large disused underground tank, a portion of which is now to be re-conditioned to store about 100,000 gallons. Water will be supplied by train. Two Diesel engines and centrifugal pumps, each capable of delivering 6,000 gallons per hour into an overhead 15,000-gallon tank, are being installed.

No water for locomotive purposes has so far been available at Mersa Matruh, owing to the military demands on the local aqueduct supply. Water from this source would be unsuitable for use in locomotives without special treatment to remove salinity.

*(e) Capacity and Limitations*

Since the strengthening of the bridge at Mex, Category II locomotives have been allowed over the line on a slow timing. Loads for mixed trains are restricted to 35 equivalent 10-ton units, exclusive of water tanks. Re-railing and re-sleeping is now in progress and it is hoped that shortly the schedule will be reduced. Time keeping since the introduction of Category II engines has been good.

The stopping passenger trains take 8 hours 20 minutes for the journey from Alexandria to Mersa Matruh, and the schedule for non-stopping mixed trains is 10 hours. The longest section, between Alamein, Kilometre 120, and Sidi Abd el Rahman, is 26.78 km. Triangles exist at Daba and Mersa Matruh. It is estimated that the maximum capacity of the line is six trains each way per day.

*(f) Military Value*

The Maryut Line offers the only reliable L. of C. for troops stationed in the Western Desert. Desert roads are bad and rapidly deteriorate with traffic. Coastwise shipping to Mersa Matruh depends on the weather, and has an upper limit lower than the capacity of the Railway.

**14. Other Government Railways**

As mentioned in para. 2, these are :—

- (i) The Western Oasis Line.
- (ii) The Auxiliary Railways of Upper Egypt.

(a) *The Western Oasis Line*

This was constructed under concession in 1906, opened to traffic in 1908 and taken over by the Government in 1929.

The line is of 2-ft. 6-in. gauge and leads from Oasis Junction on the Shellal line to the Oasis of Kharga, a distance of 121 miles.

It is laid with 36 Kg. Vignole rail on partly wooden and partly steel sleepers. The steepest grade is 1/36 for about a mile. There are no bridges beyond Qara, the first station after Oasis Junction.

Its capacity is not likely to be more than one train each way a day of 50 tons nett load.

From a military standpoint, it is of little value.

(b) *The Auxiliary Railways of Upper Egypt*

They were constructed between 1870 and 1878, mainly for the transport of sugar canes. They were taken over by the Government in 1906.

They are constructed in two unconnected sections, the Northern section and the Southern section, the distance between them being about 220 miles, and both running parallel to the Nile on its west bank.

The gauge is 4 ft. 8½ in. Construction is on a lighter standard than the main lines and of varied materials.

The Northern section is 155 miles long and is connected with the main Shellal line at several stations (*see* Map No. 8).

The Southern Section is 38 miles long and is not connected with the main line, which here runs on the opposite side of the river.

The bridges over the Ibrahimya Canal in the Northern section are of a light description and can only take Category VI type of locomotives.

The railway is not likely to have much military value, except possibly for the movement and maintenance of local forces on the west bank of the Nile.

## 15. Private Railways

These have already been referred to in para. 2.

(a) *The Delta Light Railways*

The Egyptian Delta Light Railways Ltd., is a British company founded in 1897, with headquarters at Alexandria

The company owns a very complete network of 2 ft. 6 in. gauge single line, covering almost the whole of the delta (see Map No. 8). The total route mileage is 605 miles.

It is divided into three districts by the two branches of the Nile—

(i) Beheira district, west of the Damietta branch with 143 miles of line.

(ii) Gharbya district, between the Damietta and Rosetta branches, with 233 miles of line.

(iii) Eastern district, east of the Rosetta branch, with 229 miles of line.

There is no connection by bridge across the Nile between the three districts.

Each district has a District Engineer, District Traffic Superintendent and District Locomotive Superintendent, responsible to the General Manager at Alexandria.

The system caters mainly for agricultural interests, the most important item of goods traffic being cotton. There is also a considerable passenger service, which is worked largely by Sentinel tractors.

The permanent way consists of 35-lb. flat-bottomed rails spiked direct to wooden sleepers.

Traffic is controlled by telegraph on the line clear system. Speed is limited to 30 Km. per hour and, as all trains stop at every station, no fixed signals are considered necessary, except for the control of approaches to swing bridges over the canals.

Locomotives are of many different kinds, but they are all of the side tank type. Most of the passenger and goods stock is of the bogie pattern.

Well-equipped workshops are situated in each district at Damanhur, Zifta and Mansura.

Strategically, the system is not considered to have much value for the movement of troops, since all potential centres of disturbances are better served by the E.S.R. Also, since carrying capacity is small and speed is low, the local movement of troops could be more expeditiously effected by road.

The system, however, would need careful guarding, since its dislocation by sabotage would seriously interfere with the life of the community.

The workshops would be useful to supplement those of the E.S.R. in the event of their being required for the repair of M.T. vehicles and tanks in an emergency (see para. 4).

(b) *Chemins de Fer de la Basse Egypte*

This railway is owned by a Belgian company formed in 1896, with headquarters at Mansura.

It consists of 158 miles of single line metre gauge track, lying in the north-eastern portion of the delta and runs from Damietta in the north to Kafr Sakr in the south, and from Mansura eastwards as far as Matarya on Lake Menzala (see Map No. 8).

The track consists of 23 Kg. Vignole rail laid on wooden sleepers with earth ballast. There are numerous bridges over the canals.

The main station is at Mansura, where there is a group of marshalling sidings and workshops for the maintenance of the 22 locomotives belonging to the company.

The system serves much the same purpose as the Delta Light Railways and can be regarded in a similar light from a military standpoint.

(c) *The Faiyum Railways*

This system was constructed in 1894 and is owned by an Anglo-Belgian company, with its headquarters in the Faiyum.

It consists of 104 miles of single line 2 ft. 6 in. gauge track, covering the greater part of the Fayum in the form of six branches radiating from the chief town, Medinet el Faiyum (see Map No. 8).

Rails vary in weight from 16 to 21 Kg. to the metre and are laid on wooden sleepers. The maximum gradient is 1/80. There are many simple bridges over the irrigation channels in the area.

The main water supply is at Faiyum, obtained from the Bahr Yusef.

Traffic is primarily agricultural and acts as a feeder to the E.S.R., which serves the area by a branch line from Wasta.

The system is of no particular military importance.

(d) *The Khatatba-Wadi Natrun Railway*

This private line is the property of the Egyptian Salt and Soda Co., Ltd., and traverses the desert to connect the works of that company in the Wadi Natrun with Khatatba on the Cairo-Tel-el-Barud section of the E.S.R. (see Map No. 8).

The line is 32 miles long of 75 cm. gauge. The track is of the Decauville pattern, i.e., rails clipped to steel or reinforced concrete sleepers.

There is a transshipment station at Khatatba. The other stations are Bir Victoria (14 miles from Khatatba) and Bir Hooker, the terminus in the Wadi Natrun.

There is a good water supply at Bir Hooker, but that at Bir Victoria, driven by a windmill pump, is uncertain.

Owing to the low speed and lack of rolling stock and loops, two trains a day each way is the maximum capacity that can be expected. Size of train. Maximum trains 18 wagons. Average tare of wagons 2 tons, capacity 3 cubic metres.

The line would be of value for maintaining a small force operating in the Wadi Natrun area.

*(e) Kantara-Rafa Section of the Palestine Railway*

This lies in Egyptian territory as far as Rafa on the borders of Sinai and Palestine, a distance by rail of 126 miles and is controlled, operated and maintained by the Palestine Railways Administration.

The line is single, of 4 ft. 8½ in. gauge, and consists of 75-lb. per yard flat-bottomed track laid on bearing plates spiked to wooden sleepers. It is sand ballasted. Curves and gradients are easy.

It provides the important through rail connection between Egypt, Palestine, Syria and Turkey, and for this reason its military value is great.

Connection with the E.S.R. is effected by the wagon ferry at Qantara, as described in para. 9.

## 16. Future Developments

A change in General Managers of the E.S.R. three years ago has resulted in a more progressive policy being adopted with a view to bringing the system more into line with the general advancement of the country.

Many reforms in respect of traffic working have been introduced and more are contemplated. Various constructional projects are under consideration. The more important of these are—

(i) A Behera relief line to connect Ityai-el-Barud direct with Gabbary, Alexandria, to avoid the possible necessity of quadrupling the line Alexandria-Damanhur. Owing to density of traffic in this latter section, goods trains frequently suffer excessive delays.

(ii) To connect Sidi Ghazi in the northern part of the Delta with Busili (near Rosetta) to serve agricultural developments in that area.

(iii) To extend the line from Samana to San-el-Haga in the north-east portion of the Delta. This is in connection with a scheme for the reclamation of Lake Menzala and its development for agriculture.

(iv) A branch line from Qaliub to Cairo via Taudib (Ismailia Canal) to avoid the possible necessity of quadrupling the line Cairo-Qaliub.

Other projects which have distinct military interest, but which, owing to the expense involved and lack of economic justification, lie more in the category of visions of the future, are :—

(i) A branch line from Qift on the Shellal main line to Qossier on the Red Sea.

(ii) To connect Port Fouad (opposite Port Said) with Romani on the Palestine Railway.

(iii) A tunnel under the Suez Canal to connect the E.S.R. with the Palestine Railways.

TABLE I  
Times and Distances

Section.	Station.	Distance from Cairo in miles.		Journey Time in hours (Passenger Trains).
		Miles.	Kilos.	
Cairo-Port Said ..	Benha .. ..	28	45	$\frac{1}{2}$
	Ismailia .. ..	98	113	$2\frac{1}{2}$
	Qantara .. ..	118	146	$3\frac{1}{4}$
	Port Said .. ..	146	191	4
Cairo-Alexandria ..	Benha .. ..	As above		As above
	Tanta .. ..	53	85	$1\frac{1}{2}$
	Alexandria .. ..	129	208	$3\frac{1}{2}$
Cairo-Shellal .. ..	Assiut .. ..	232	375	$5\frac{1}{2}$
	Sohag .. ..	290	467	$7\frac{1}{2}$
	Luxor .. ..	416	671	$12\frac{1}{2}$
	Shellal .. ..	550	886	$16\frac{1}{2}$
Cairo-Suez (via Zagazig)	Ismailia .. ..	As above		As above
	Geneifa .. ..	133	165	$3\frac{1}{2}$
	Suez .. ..	157	205	$4\frac{1}{2}$
Cairo-Suez (direct line)	Ein Shems .. ..	7	11	$\frac{1}{2}$
	Suez .. ..	88	144	$3\frac{1}{2}$
Cairo-Mersa Matruh ..	Mallaha Junction	123	198	3
	Gabbary Junction	131	208	$3\frac{1}{2}$
	Daba .. ..	234	374	8
	Fuka .. ..	266	425	9
	Mersa Matruh .. ..	314	502	$11\frac{1}{2}$
Cairo-Palestine ..	Kantara West .. ..	118	146	$3\frac{1}{2}$
	Kantara East .. ..	—	—	$6\frac{1}{2}$
	Rafa .. ..	244	348	$10\frac{1}{2}$
	Lydda .. ..	308	450	13
	Haifa .. ..	378	561	$15\frac{1}{2}$
	Jerusalem .. ..	350	517	$15\frac{1}{2}$

TABLE II

## Swing Bridges

N.B.—These bridges are easily located on Map No. 8.

Name, No. and Location of Bridge.	Approx. Distance from Cairo in miles.		Type.	Permissible Locomotive Category.	Span in metres.	
	Miles.	Kilos.			Swing.	Total.
<i>Section— Cairo-Alexandria.</i>						
Shubra, No. 51, on Ismailia Canal.	4	6	Double track. Plate girders.	I	1-11-00	24-30
Raiyah Tewfiky, No. 54, on Raiyah el Tewfikiya.	27	44	Double track. Plate girders.	II	1-10-80	42-80
Benha, No. 56, on the Nile.	29	47	Double track. Lattice girders.	I	2-23-80 each.	296-60
Birket el Sab, No. 57, on Bahr Shebin Canal.	42	68	Double track. Lattice girders.	I	1-11-60 1-10-68	73-10
Dalgamun, No. 61, on Baguriya Canal.	63	102	Double track. Plate girders.	I	2- 9-00 each.	50-00
Kafr-el-Zaiyat, No. 63, on the Nile.	64	103	Double track. Lattice girders.	II	2-26-50 each.	492-90
Hagar el Nawatiya, No. 74, on Mahmudiya Canal.	125	201	Double track. Plate and Lattice girders.	I	1-17-81	62-75
Mahmudiyah Locks, No. 80, on Mahmudiya Canal.	129	207	Double track. Lattice girders.	I	1- 6-90 1-12-10	70-75
<i>Section— Benha-Port Said.</i>						
Raiyah Tewfikya, No. 105, on Raiyah Tewfikya.	28	45	Double track. Plate girders.	II	1- 9-65	46-97
El Wadi, No. 93, on Wadi Canal.	51	82	Double track. Plate girders.	II	1- 6-18	14-52
Abu el Akdar (Bascule), No. 94, on Abu el Akdar Canal.	55	89	Double track. Plate girders.	I	1- 7-00	22-35
Qantara, No. 180, on Sweet Water Canal.	118	190	Double track. Plate girders.	II	1-10-30	21-50
Raswa, No. 218, on Menzala Canal.	144	232	Double track. Lattice girders.	I	2-12-60 each.	47-70
<i>Section— Nefisha-Suez.</i>						
Nefisha, No. 100, on Ismailia Canal.	96	154	Double track. Plate girders.	II	1- 8-60	23-24
<i>Section— Cairo-Shellal.</i>						
Imbaba, No. 48, on the Nile.	2	3	Double track. Lattice girders.	I	2-23-00 each.	488-80
Assiut, No. 287, on Ibrahimiya Canal.	232	374	Double track. Lattice girders.	I	2-23-90 each.	104-20
Nag Hamadi, No. 15, on the Nile.	343	551	Single track. Lattice girders.	IV	2-23-90 each.	403-65

TABLE III  
Fixed Bridges (over 30 metres span)

Name, No. and Location of Bridge.	Approx. Distance from Cairo in miles.		Type.	Permissible Locomotive Category.	Span in metres.	
	Miles.	Kilos.			No.	Total.
Qusheisha, No. 39, near Wasta.	50	81	Double track. Lattice girders.	II	6	298·80
Guirgeh, No. 336, near Girga.	310	500	Single track. Lattice girders.	II	2	91·20
Abu Shusha, No. 19, near that station.	327	528	Single track. Lattice girders.	II	2	107·60
El Taref, No. 13, near Dabra.	348	560	Single track. Plate girders.	IV	1	41·90
Samata, No. 10, near Aulad Amr.	368	592	Single track. Plate girders.	IV	1	31·80
Bayadiya, No. 501, near Luxor.	421	679	Single track. Plate girders.	IV	1	31·80
Maryut Bridge, near Mex Junction Station.	135	218	Single track. Lattice girders.	II*	1	54·00

\* Originally Category IV. Strengthened to take Category II locomotives in 1936, by the provision of two timber pile bents supporting the span.

TABLE IV

## Stations

N.B.—(1) The largest stations, where facilities for troop movements are obviously ample, are excluded.

(2) Small stations altogether unsuitable for troop movements are also excluded.

(3) For distances of stations from Cairo, see Map No. 8, and for the Maryut Line, see Map No. 1.

(4) None of the stations shown below have end loading ramps.

Station.	Loops.		Dead Ends.		Platforms.	
	No.	Length in Km. m.	No.	Length in Km. m.	No.	Length in metres.
<i>Section— Cairo-Alexandria.</i>						
Shubra .. ..	2	0·754	5	5·305	2	150 each
					1	150
					2	150 each
Qaliub .. ..	1	0·320	9	3·791	2	160 each
Qaha .. ..	1	0·288	3	1·608	2	150 each
					1	160
					1	50
Tukh .. ..	1	0·230	8	3·037	2	180 each
					1	60
					1	320
Sandanur .. ..	1	0·173	2	1·307	2	150 each
Quweishna .. ..	1	0·270	3	1·589	2	135 each
					1	135
					1	86
Birket el Sab. . .	—	—	9	4·191	1	60
					1	200
					1	150
					1	90
					1	110
Difra .. ..	—	—	4	1·470	2	150 each
					1	50
					1	80
Shubra el Namla ..	1	0·192	5	1·623	2	150 each
					1	60
					1	25
Taufiqiya .. ..	1	0·240	3	1·597	2	150 each
					1	50
					1	60
Saft el Miluk ..	2	0·673	4	1·610	1	150
					1	120
					1	120
					1	140
Abu Hummus ..	1	0·379	3	1·718	1	140
					2	140 each
					1	35
Disounis .. ..	2	0·373	2	1·319	1	50
					2	140 each
					1	50
Mamal el Qizaz ..	2	0·472	2	1·312	1	40
					2	140
					1	40
Kafr el Dawar ..	3	0·662	8	3·533	2	70 each
					1	63
					2	140 each
					1	150

TABLE IV—*contd.*Stations—*contd.*

Station.	Loops.		Dead Ends.		Platforms.	
	No.	Length in Km. m.	No.	Length in Km. m.	No.	Length in metres.
<i>Section—Cairo-Alexandria—contd.</i>						
Ezbet Khurshid ..	2	0·527	2	1·377	1	25
					2	140 each
					1	50
Sidi Gaber .. ..	4	2·042	6	1·450	1	185
					1	245
					1	70
					1	65
<i>Section—Benha-Por Said.</i>						
Minyet el Qamh ..	1	0·333	9	2·880	1	100
					1	240
					1	150
El Zankalun .. ..	2	0·507	2	1·038	1	45
					2	131 each
Abu Hammad .. ..	4	1·068	1	0·702	4	70 each
Tel el Kebir .. ..	1	0·330	3	1·810	1	160
					1	170
El Qassasin .. ..	2	0·416	3	1·425	1	60
					2	60 each
					1	50
Abu Sueir .. ..	1	0·273	6	3·471	1	30
					1	110
					1	100
Moascar Camp .. ..	5	3·117	3	0·388	1	400
El Firdan .. ..	—	—	2	0·858	1	140
					1	100
El Ballah .. ..	2	0·497	3	3·572	1	60
					1	100
<i>Section—Nefisha-Suez.</i>						
Nefisha .. ..	2	1·472	3	0·882	1	100
Serapeum .. ..	2	1·195	1	0·156	1	150
Fayid .. ..	2	0·829	2	0·212	1	50
Geneifa .. ..	2	0·820	2	0·195	2	50 each
El Kubri .. ..	1	0·560	1	0·104	1	100
El Arbin .. ..	1	0·248	2	0·440	1	90
<i>Section—Cairo-Shellal</i>						
El Giza .. ..	—	—	6	2·200	2	150
					1	240
Abu el Numrus ..	—	—	4	1·729	2	150 each
					1	60
Tammuh .. ..	—	—	4	1·627	2	150 each
					2	60 each
El Hawamdiya ..	—	—	8	2·909	2	150 each
					2	100 each
El Badrashein ..	1	0·313	3	1·337	2	150 each
					1	100
					1	75
El Maraziq .. ..	1	0·390	3	1·480	3	150 each
					1	128

TABLE IV—*contd.*Stations—*contd.*

Station.	Loops.		Dead Ends.		Platforms.	
	No.	Length in Km. m.	No.	Length in Km. m.	No.	Length in metres.
<i>Section—Cairo-Shellal</i> <i>—contd.</i>						
Mazghuma .. ..	—	—	4	1·834	2	130 each
					1	100
					1	40
El Bileida .. ..	1	0·365	3	1·198	2	150 each
					1	120
El Aiyat .. ..	—	—	6	1·907	1	150
					1	132
					1	100
					1	40
El Matanya .. ..	—	—	6	1·920	2	150 each
					1	100
					1	40
Kafr Ammar .. ..	2	0·916	2	1·047	2	150 each
					1	100
El Quturih .. ..	1	0·380	4	1·505	1	160
					2	150 each
					1	75
El Riqqa .. ..	1	0·372	3	1·129	2	130 each
					2	108
Beni Hideir .. ..	1	0·392	3	1·423	2	150 each
					2	120 each
Ishmant .. ..	1	0·385	3	0·870	2	150 each
					2	130 each
Bush .. ..	1	0·390	4	1·420	2	145 each
					2	120 each
Tansa .. ..	1	0·396	4	1·387	2	155 each
					2	120 each
Biba .. ..	2	0·847	6	2·028	2	155 each
					2	125 each
					1	68
Sida .. ..	1	0·230	2	0·671	2	150 each
					1	50
El Fashn .. ..	1	0·480	7	1·896	2	150 each
					2	120 each
					1	100
El Fant .. ..	1	0·394	3	0·836	2	150 each
					2	100 each
Maghagha .. ..	2	0·818	6	3·445	2	195 each
					1	135
					2	185 each
Aba el Waqf .. ..	1	0·374	3	0·761	2	150 each
					2	108 each
El Moadda .. ..	1	0·384	4	1·378	2	150 each
					2	120 each
Beni Mazar .. ..	1	0·378	3	0·896	2	150 each
					2	120 each
Mataf .. ..	1	0·410	6	1·778	2	150 each
					2	120 each
Qulusana .. ..	1	0·404	3	0·822	2	150 each
					2	120 each
Samalut .. ..	1	0·394	4	1·343	2	150 each
					2	120 each
Itsa .. ..	1	0·425	3	0·867	2	150 each
					2	120 each

TABLE IV—*contd.*Stations—*contd.*

Station.	Loops.		Dead Ends.		Platforms.	
	No.	Length in Km. m.	No.	Length in Km. m.	No.	Length in metres.
<i>Section—Cairo-Shellal</i> <i>—contd.</i>						
El Burghaya ..	1	0·361	2	0·607	2	150 each
Mansafis .. ..	1	0·225	4	1·410	1	150
					1	60
Abu Qurqas .. ..	3	1·125	6	2·945	2	150 each
					1	180
Itlidim .. ..	1	0·360	3	0·795	2	150 each
					1	152
					1	60
Mallawi .. ..	2	1·050	9	2·785	1	195
					1	200
					1	205
					1	480
El Garf H. .. ..	1	0·450	4	1·480	2	150 each
Dairut .. ..	6	1·960	4	1·410	1	240
					1	245
					2	150 each
Nazali Ganub ..	2	0·610	3	0·865	2	150 each
					1	160
					1	55
Beni Qorra .. ..	1	0·340	2	0·770	2	180 each
					1	182
					1	100
Manfalut .. ..	3	0·970	7	2·165	1	150.
					1	135
					3	200 each
El Hawatka .. ..	1	0·450	3	0·815	1	150
					1	160
					1	162
					1	65
Beni Husein .. ..	1	0·450	2	1·220	2	150
					1	152
					1	40
Manqabad .. ..	1	0·450	2	1·215	2	150 each
					1	152
					1	40
Tima .. ..	3	1·661	—	—	2	70 each
Tahta .. ..	3	1·920	1	0·200	2	70 each
El Sawama .. ..	2	0·890	2	1·200	2	130 each
					1	40
El Asirat .. ..	3	1·351	—	—	3	70 each
Girga .. ..	3	1·959	—	—	2	70 each
Abu Shusha .. ..	2	1·078	—	—	2	100 each
Abu Tisht .. ..	2	1·098	—	—	2	100 each
Oasis Junction ..	1	0·380	3	0·564	1	150
					1	50
Farshut .. ..	3	1·420	—	—	1	140
					1	60
Nag Hamadi .. ..	2	0·611	5	2·103	1	140
					1	130
El Dabba .. ..	2	1·102	—	—	1	100
Faw .. ..	2	1·108	—	—	1	100
Dishna .. ..	3	1·112	—	—	1	130
					1	60
Samata .. ..	2	1·099	—	—	2	100 each

TABLE IV—*contd.*Stations—*contd.*

Station.	Loops.		Dead Ends.		Platforms.	
	No.	Length in Km. m.	No.	Length in Km. m.	No.	Length in metres.
<i>Section—Cairo—Shellal</i> <i>—contd.</i>						
Qena .. .. .	4	2·020	—	—	1	120
					1	155
					1	130
El Ashraf .. ..	2	0·813	2	0·783	2	100 each
Qift .. .. .	2	0·835	—	—	1	110
					1	95
Qus .. .. .	2	1·428	—	—	1	110
					1	100
Isna .. .. .	2	0·710	3	1·475	1	100
					1	50
Idfu .. .. .	3	1·150	5	1·615	1	155
					1	70
<i>Section—Alexandria—</i> <i>Mersa Matruh.</i>						
Mex Junction ..	4	0·780	16	4·210	2	100 (island)
Abd el Kader ..	1	0·210	—	—	1	41
					1	35
Amirya .. .. .	2	0·195	2	1 0·135 1 quarry siding.	1	35
					1	75
Ikingi Maryut ..	1	0·237	2	0·266	1	120
Hawaria .. ..	1	0·500	—	—	1	98
					1	70
					1	15
Bahig .. .. .	1	0·322	—	—	1	140
					1	35
Burg el Arab ..	2	0·455	—	—	2	53 (island)
Gharbaniyat (a n d Quarry). .. .	2	0·635	1	2·844	1	95
					1	35
Hammam .. ..	2	0·370	1	0·065	1	120
					1	53
Rueisat .. ..	2	0·610	—	—	1	150
					1	60
Imayid .. .. .	2	0·610	—	—	1	150
					1	60
Alamein .. ..	2	0·610	—	—	1	150
					1	60
Sidi Abdel Rahman ..	2	0·385	—	—	1	135
					1	30
Ghazal .. .. .	1	0·215	—	—	1	70
Daba .. .. .	2	0·780	Triangle (0·245 clear at apex).		1	230
Galal .. .. .	2	0·622	—	—	1	150
					1	50
Fuka .. .. .	2	0·996	1	0·058	1	150
			1	0·154	1	50
			Both end loading.			
Abu Hagag .. ..	2	0·680	—	—	—	—
Sidi Hunaish ..	2	0·930	—	—	—	—
Jerawla .. .. .	2	0·680	—	—	—	—
Mersa Matruh ..	4	1·362	2	0·185	1	52
			End loading.			
			3	0·393		
			Refuge.			

TABLE V  
Watering Stations

Station.	Storage Capacity, in gallons.	No. of Water Columns.	Source of Supply.	No. and Type of Pumps.
<i>Cairo Division.</i>				
Abu El Ela ..	—	1	Water Co.	—
Cairo Marshal- ling Yard.	1- 7,023	2	Water Co.	—
Abbassia ..	—	1	Water Co.	—
Cairo Station	—	5	Water Co.	—
Abu Ghatos	1-78,500	2	Water Co.	—
Pont Limoun	1- 8,295	—	Water Co.	—
Qaliub ..	1- 8,424	—	Artesian well	1-3-in. double acting Worth- ington steam belt driven. 1-3-in. hand wheel.
Shebin el Qanatar.	1-44,000	—	Nile	1-6-in. double acting steam belt driven Worthington. 1-3-in. hand wheel.
Marg ..	1- 8,390	—	Artesian well	1-3-in. double acting steam belt driven Worthington.
Barrage ..	1- 4,545 1-16,000	—	Nile	2-6-in. double acting steam belt driven Worthington.
Bab el Louk	—	—	Water Co.	1-3-in. stand pipe.
Moasla ..	2- 2,500 Total.	1	Water Co.	—
Saida Zenab	2- 2,000 1- 4,000 1- 1,500	—	Water Co. and well.	2-3-in. and 4-in. hand wheels steam belt driven.
Helwan ..	3- 1,500 each.	1	Helwan Tanzim.	—
Tura ..	1- 4,000 1- 8,150	2	Nile and well	1-2-in. steam "Weir." 1-2-in. steam "Burton."
<i>Lower Egypt Division.</i>				
Tel el Kebir	1-15,900	—	Nile	1-4-in. hand.
Kafr Sakr ..	1- 8,424	—	Nile	1-3-in. hand.
Faqus ..	1-15,900	—	Nile	1-6-in. Worthington steam. 1-6-in. Tangye steam.
Zagazig ..	1-40,000	2	Nile	2-6-in. Worthington steam.
Sherbin ..	1-15,900	—	Nile	1-6-in. Worthington hori- zontal steam. 1-3-in. vertical hand. 1-3-in. horizontal steam. 1-3-in. vertical hand. 1-3-in. vertical hand, worked by windmill.
Damietta ..	1-15,400	1	Nile	2-2½-in. and 3-in. horizontal steam Worthington.
Biala ..	1-14,300	2	Nile	2-6-in. each horizontal steam Worthington.
Mansura ..	1-37,200	3	Nile	—
Port Said ..	1- 3,100	—	Suez Canal Co.	—
Rue Colmer, Suez.	1-Elevated	2	Suez Canal Co.	—
Port Tewfik	1-11,700	1	Suez Canal Co.	—
Nefisha ..	1- 6,000	1	Nile	1-3-in. Worthington steam. 1-2-in. driven by windmill.
Fayed ..	1-15,800	—	Nile	1-6-in. Worthington steam. 2-2-in. driven by windmill.
Qantara ..	1-38,000	—	Nile	2-6-in. Worthington steam.

TABLE V—*contd.*Watering Stations—*contd.*

Station.	Storage Capacity, in gallons.	No. of Water Columns.	Source of Supply.	No. and Type of Pumps.
<i>Lower Egypt Division—contd.</i>				
Ismailia ..	1-38,000	3	Nile	2-6-in. Worthington steam.
Minuf ..	1-24,000	1	Nile and well	2-6-in. Worthington steam.
Khatatba ..	1-15,800	4	Nile	2-6-in. Worthington steam.
Tairieh ..	1- 8,400	—	Nile	2-3-in. hand.
Tel el Barud	1-38,000	2	Nile	2-6-in. Worthington steam.
Kafr el Zayat	1-15,800	1	Nile	2-6-in. Worthington steam.
Benha ..	1-38,000	3	Nile	2-6-in. Worthington steam.
Tanta ..	1-40,000	7	Artesian well	2-6-in. Worthington steam.
	1-27,900	—	—	1-5-in. electrically driven centrifugal.
Birket el Sab	1- 8,400	—	Nile	2-3-in. hand.
Zifta ..	1-44,000	—	Nile and well	2-6-in. Worthington steam.
Mehallet Roh	1-15,800	1	Nile and well	1-6-in. Worthington steam.
				1-3-in. Worthington steam.
Danasur ..	1- 6,000	—	Nile and well	1-3-in. hand.
Mehalla el Kubra.	1- 2,850	—	Municipality	—
Kafr el Sheikh	1- 8,400	—	Nile	1-3-in. hand.
Qallin ..	1-15,800	1	Nile	1-4-in. Tendenself-controlled internal valve.
				1-6-in. Worthington.
<i>Alexandria Division.</i>				
Gabbary:—				
Near Electrical Power House.	2-65,000 total.	—	Electrical Power House.	2-6-in. electric pumps.
Erection Siding.	1- 4,326	—	—	—
Sidi Kerim..	—	1	Alexandria Water Co.	—
Guezireh Bridge.	—	1	Nile	—
Customs ..	—	1	Nile	—
Shed Weigh-bridge.	—	1	Nile	—
Line No. 5 ..	—	1	Nile	—
Line No. 8 ..	—	1	Nile	—
Line No. 3 ..	—	1	Alexandria Water Co.	—
Hadra-Nuzha Locomotive Shed.	1- 8,400	—	—	2-3-in. electric.
Damanhur ..	2- 5,326	4	Nile	2-5-in. steam.
	2-51,600			
Kafr el Dawar	1-15,100	—	Nile	1-5-in. steam.
Montaza ..	1-152,000	—	—	2-4-in. worked by paraffin engine.
				1-3-h.p. pump, paraffin engine.
Mex ..	—	1	Alexandria Water Co.	—

TABLE V—*contd.*Watering Stations—*contd.*

Station.	Storage Capacity, in gallons.	No. of Water Columns.	Source of Supply.	No. and Type of Pumps.
<i>Alexandria Division—contd.</i>				
Daaba ..	1-100,000	2	By water train.	2-Diesel centrifugal to overhead tank, 15,000 gallons capacity.
New Junction	1-16,000	—	Alexandria Water Co.	—
Rosetta ..	1- 8,424	—	Municipality	—
Idfina ..	—	1	Nile	1-4-in. hand.
<i>Upper Egypt Division.</i>				
Bulaq el Dakrur.	1-38,000	—	Giza and Gezira Water Co.	—
Imbaba ..	1- 9,400	—	Nile	1-Centrifugal, 3-in. to 2-in., driven by electric motor.
Manashi ..	1- 8,000	—	Nile	2-Irvin vertical hand, 3-in. diameter by 9-in. stroke.
Hawamdiya	1- 8,000	—	Sugar factory.	—
Mazghuna ..	1-14,400	—	Nile	1-Steam engine, 8-h.p.
Wasta ..	1-38,220	2	Artesian	2-6-in. vertical belt driven.
Faiyum ..	1-11,275	—	Nile	2-6-in. Worthington steam.
Beni Suef ..	1-41,775	2	Nile	1-6-in. Worthington steam.
Beni Suef	1- 1,877	1	Artesian	1-6-in. Worthington steam.
Auxiliary.	—	—	—	1-3-in. hand.
Minya ..	1-54,000	3	Nile	1-6-in. Worthington steam.
	1- 3,600	—	—	2-Electric.
Maghagha ..	1-45,000	1	Nile	1-6-in. Worthington steam.
Beni Qurra..	1-15,000	—	Nile	1-6-in. Worthington steam.
Mallawi ..	1-21,700	—	Nile	1-6-in. Worthington steam.
Dairut Auxiliary.	1- 883	—	Nile	1-2½-in. hand.
Abu Qirgas Auxiliary.	1- 862	2	Nile and Artesian.	1-2½-in. hand.
Idara Auxiliary.	1- 945	—	Nile and Artesian.	1-2½-in. hand.
Maqras Auxiliary.	1- 3,473	—	Nile	1-2½-in. hand.
Sarafim Bey Auxiliary.	1- 831	—	Nile and Artesian.	1-2½-in. hand.
Tumbo Auxiliary.	1- 1,146	—	Nile	1-2½-in. hand.
Roda Auxiliary.	1- 945	—	Nile	1-2½-in. hand.
Sohag ..	2-38,000	2	Nile	3-6½-in. by 9-in. vertical, 2 cylinder, belt driven each.
	1-10,700	—	Water Co.	1-Gas engine, 10-h.p.
Assiut ..	1- 8,424	—	Water Co.	1-5-in. by 8-in. vertical, belt driven.
Nag Hamadi	1-16,777	—	Nile	2-7½-in. Worthington steam.
Girga ..	1-12,187	—	Well	2-3½-in. steam donkey.
				1-3-in. vertical hand.

TABLE V—*contd.***Watering Stations—*contd.***

Station.	Storage Capacity, in gallons.	No. of Water Columns.	Source of Supply.	No. and Type of Pumps.
<i>Upper Egypt Division—contd.</i>				
Tima ..	1-11,706	2	Well	2-6½-in. Worthington donkey steam. 1-3-in. hand.
Abu Shusha	1- 8,424	—	Nile	1-3-in. vertical hand driven.
Dishna ..	1- 8,424	—	Well	2-3-in. vertical hand driven.
Qara ..	1- 6,100	Pipe 1	Well	2-8-in. horizontal donkey steam.
Maharraqa ..	1- 6,500	Taps 2	Well	2-3-in. vertical steam.
Asfun ..	1- 1,118	—	Tanks from Matana.	1-3-in. hand.
	1- 2,565	—	Well	
Gabalein Auxiliary.	1- 2,860	—		1-3-in. hand.
Dabiya ..	1- 1,118	—	Water pump engines of Sayed Bey and Prince Kemal.	1-3-in. hand.
Shellal ..	1-40,000	—	Artesian, Pipe, 2-in.	2-6-in. steam.
Aswan ..	1- 4,300	—	Nile	—
Kom Ombo	1- 8,900	—	Nile	1-6-in. steam.
Idfu ..	1- 8,424	—	Nile	2-4-in. hand.
Isna ..	1- 4,300	—	Well	1-4-in. hand.
Luxor ..	1-40,000	2	Nile	2-6-in. Worthington steam.
	1-38,220	—	—	1-3-in. rotary.
Qena ..	1-15,900	—	Well	3-5½-in. steam. 1-3-in. vertical hand.
Mata'ana Auxiliary.	3- 4,000 total.	1	Nile	1-3-in. pump engine. 1-3-in. pump engine, with belt.
Armant Auxiliary.	—	1	Armant Sugar Factory.	—
Guezireh ..	1-15,900	1	Nile	2-6-in. steam.

TABLE VI  
Locomotives

Type and Nos. of Engines.	Wheel Arrange- ment.	Number available.	Tractive Effort in lb.	Maximum Axle Load.	Water Capacity in gallons.	Coal Capacity in tons.	Maximum Haulage Capacity.		Category of Track over which they can run.		
							Tons.	Equivalent 10-ton Trucks.			
<i>Passenger—</i>				tons. cwt. qrs.							
1-5 .. ..	4-4-2	5	18,133	18	10	0	5,500	9	700	50	II
6-25 .. ..	4-4-2	20	19,528	18	7	2	5,500	9	700	50	II
26-65 and 68-80 .. ..	4-4-2	53	19,528	18	7	0	5,500	8-5	700	50	II
66 and 67 .. ..	4-6-0	2	21,970	18	12	0	5,500	8-5	700	50	II
201-210 .. ..	4-4-0	10	15,380	15	12	0	3,886	9	560	40	IV
221-235 .. ..	4-4-0	13	15,328	16	12	0	3,000	9	560	40	IV
236 .. ..	4-4-0	1	17,184	17	10	2	3,000	9	560	40	II
290-294 .. ..	4-4-0	4	13,320	16	0	0	2,500	9	560	40	V
296-306 .. ..	4-4-0	4	13,320	16	0	0	3,000	6	560	40	V
331, 333 and 338 .. ..	4-4-0	3	17,200	17	0	0	3,000	9	560	40	II
349 .. ..	4-4-0	1	16,240	17	0	0	3,000	9	560	40	II
351-360 .. ..	4-6-0	10	19,147	17	13	2	4,000	9	980	70	II
401-436 and 438-457 .. ..	2-4-0	21	11,546	14	11	0	2,850	9	420	30	VI
437 .. ..	2-4-0	1	11,005	14	13	0	1,800	3-5	420	30	VI
<i>Mixed Traffic—</i>											
545-604 .. ..	2-6-0	60	23,400	18	10	0	5,500	8-5	1,120	80	II
605-624 .. ..	2-6-0	20	23,400	18	11	0	5,500	8-5	1,120	80	II
625-674 .. ..	2-6-0	50	22,462	17	13	0	3,700	6	1,000	80	IV
<i>Goods—</i>											
505-514 .. ..	2-6-0	10	26,192	17	8	0	5,500	9	1,120	80	II
515-544 .. ..	2-6-0	30	28,877	18	3	3	5,500	9	1,120	80	II
682-690 .. ..	2-6-0	9	24,109	15	10	0	3,000	9	980	70	IV
701-715 .. ..	0-6-0	10	16,580	15	0	0	3,000	9	840	60	V
		4	17,552								
		1	15,650								
716-724 .. ..	0-6-0	3	16,580	15	6	0	3,000	9	840	60	V
		4	17,552								

TABLE VI—*contd.*Locomotives—*contd.*

Type and Nos. of Engines.	Wheel Arrangement.	Number available.	Tractive Effort in lb.	Maximum Axle Load.	Water Capacity in gallons.	Coal Capacity in tons.	Maximum Haulage Capacity.		Category of Track over which they can run.
							Tons.	Equivalent 10-ton Trucks.	
Goods—contd.									
725 .. ..	0-6-0	1	19,442	15 0 0	3,000	9	840	60	V
726-740 .. ..	0-6-0	3	18,664	16 4 0	3,000	9	840	60	IV
		10	19,746						
741-755 .. ..	0-6-0	3	15,656	14 17 3	2,850	9	840	60	V
		7	16,592						
		4	17,552						
		23	14,517	14 19 0	1,800	3.5	840	60	V
		4	13,700						
756-800 .. ..	0-6-0	2	13,700	14 19 0	2,500	6	700	50	V
		5	13,699						
		1	14,517	14 19 0	2,850	9	840	60	V
		1	15,358						
801-878 .. ..	0-6-0	9	14,517	14 2 0	1,800	6	700	50	VI
		21	13,531	14 16 0	2,850	9	700	50	VI
Tanks—									
1001-1011 .. ..	2-6-2	3	24,109	18 2 0	1,589	4.1	560	40	II
1012-1041 .. ..	2-6-2	30	26,431	18 2 0	2,100	5	840	60	II
1101-1120 .. ..	2-6-2	20	28,877	18 17 0	2,100	5	840	60	II
1146-1147 .. ..	2-4-2	2	15,473	13 7 2	900	2	—	—	VI
1148-1149 .. ..	0-4-4	2	12,240	11 13 0	1,000	2.5	—	—	VI
		3	17,052	13 0 0	1,800	2	—	—	VI
		2	13,114						
1152-1195 .. ..	0-6-0	14	17,052	15 3 2	900	2	—	—	V
		1	13,114						
		8	17,052	14 12 0	1,090	2	—	—	VI
1196-1199 .. ..	0-8-0	4	32,331	18 13 0	2,000	2.25	—	—	I
1200-1259 .. ..	2-6-2	60	25,660	17 15 0	1,620	5	840	60	II
1301-1340 .. ..	2-6-4	40	23,360	18 10 0	2,620	4.5	840	60	II

TABLE VII  
Steam Rail Cars and Diesel Cars

Type.	Number available.	H.P.	Tare.			Maximum Axle Load.			Seating Capacity.
			tons. cwt. qrs.			tons. cwt. qrs.			
Steam rail car (8-wheel) ..	2	150	37	10	0	12	0	0	{ 8 seconds.
	1	100	30	15	0	11	1	0	{ 39 thirds.
Steam rail car, double unit (articulated) (12-wheel).	5	150	49	2	0	11	14	0	{ 16 seconds.
									{ 49 thirds.
	5	150	52	2	0	15	9	0	{ 16 seconds.
									{ 98 thirds.
	6	150	52	2	0	15	5	0	{ 24 thirds.
Diesel cars (Ganz) .. ..	10	320/350	65	8	0	14	0	0	{ 24 seconds.
	6	220/275	36	15	0	11	3	2	{ 70 thirds.
	4	220/275	36	15	0	11	3	2	{ 20 seconds.
									{ 95 thirds.
									{ 16 seconds.
									{ 98 thirds.
									{ 35 thirds.
									{ 35 seconds.
									{ 19 thirds.
									{ 52 thirds.

TABLE VIII  
Wagons

Type.	Number available.	Tare in tons.	Carrying Capacity in tons.	Length over Buffers in feet.	Inside Dimensions in feet and inches.		
					Length.	Width.	Height.
4-Wheeler, 10-ton, Open—							
C.1 .. .. .	1,530	7.5	10	ft. in. 26 0	ft. in. 22 7½	ft. in. 8 5½	ft. in. 1 6
C.2 .. .. .	300	8	10	26 0	22 11½	8 10½	1 8
C.3 .. .. .	1,820	9	10	26 1½	22 11½	8 10	1 8
Bogie, Open, 30-ton—							
L .. .. .	301	15	30	36 7½	32 0	8 7½	4 0
M .. .. .	50	13.7	30	35 11½	32 11½	9 0	4 0
Q .. .. .	148	15.7	30	37 7½	32 0	8 9	4 0
S .. .. .	16	14.2	30	37 1	33 11½	8 8½	4 0
T .. .. .	36	13	30	37 0	33 11½	8 8½	3 10
T.1 .. .. .	100	13.5	30	37 0	33 11½	8 6½	4 0
4-Wheeler, 10-ton, Box, Steel—							
I .. .. .	37	7.3	10	21 4½	18 4½	8 5	7 1½
I.1 .. .. .	1,870	8.3	10	26 0	23 0	8 9	7 1½
I.2 .. .. .	367	8.5	10	26 0	23 0	8 9	7 1½
I.3 .. .. .	306	9.6	10	28 4½	25 3	8 6	7 1½
I.4 .. .. .	1,993	9	10	26 1½	22 11½	8 9	7 1½
Bogie, Box, 30-ton, Steel—							
P .. .. .	129	18.2	30	36 7½	32 0	8 9	6 0
U .. .. .	16	16.2	30	37 1	33 11½	8 9	6 0
V .. .. .	36	14.2	30	37 0½	34 0	8 9	6 5
V.1 .. .. .	50	15.5	30	37 0	34 0	8 9	7 1½
W .. .. .	28	15.3	30	35 11½	32 11½	9 0	7 0
Flat Trucks—							
6-wheeler, 15-ton, "N" .. .. .	119	9	15	35 0	32 0	8 10	—
4-wheeler, bolster, O.1 .. .. .	25	7.8	30	26 0	23 0	8 10	—
	pairs.	one truck.	the pair.				

TABLE VIII—*contd.*  
Wagons—*contd.*

Type.	Number available.	Tare in tons.	Carrying Capacity in tons.	Length over Buffers in feet.	Inside Dimensions in feet and inches.		
					Length.	Width.	Height.
<i>Flat Trucks—contd.</i>				ft. in.	ft. in.	ft. in.	ft. in.
4-wheeler, bolster, O.2 .. .. .	13	6	30	22 9	19 9	6 9½	—
Bogie flats, 30-ton, "Y" .. .. .	30	11.3	the pair.	37 0	34 0	8 9	—
For boilers, "Z" .. .. .	1	29.5	45	54 7	51 0	9 0	—
<i>Cattle Trucks—</i>							
4-wheel, 10-ton, "F" .. .. .	173	7.6	10	21 10½	18 0	8 0½	—
4-wheel, 10-ton, "F" 2 .. .. .	100	11	10	26 7½	22 7½	8 5½	—
Bogie, F.1 .. .. .	42	17	30	37 7	33 11½	8 8½	—
<i>Ballast Trucks—</i>							
4-wheel, D.1 .. .. .	183	7	10	21 4½	18 0	7 5½	2 0
Bogie, R .. .. .	119	17	30	46 0½	42 6½	8 10	1 5½
Bogie, R.1 .. .. .	100	16.8	30	48 1½	45 0	8 8½	1 6½
Bogie, X .. .. .	60	15.8	30	44 10	41 3½	8 10	1 5½
<i>Brake Vans—</i>							
4-wheel, H .. .. .	2	8	—	21 10½	17 9½	8 2½	7 4½
4-wheel, H.1 .. .. .	16	14.9	—	21 10½	17 8½	8 1½	7 4½
6-wheel, H.2 .. .. .	20	25	—	26 7	22 3	8 2½	7 4½
6-wheel, H.3 .. .. .	50	25	—	35 8	—	—	—
6-wheel, H.4 .. .. .	310	25	—	26 0½	—	—	—
<i>Perishable Vans—</i>							
Originally box types "I" 1 and "I" 2 .. .. .	4	8.5	10	26 0	23 0	8 9	7 1½
Refrigerator vans, 4-wheel, "I" 5 .. .. .	18	14	10	28 4½	23 10½	7 8	9 8
Ventilated trucks, 4-wheel, "E" 2 .. .. .	82	9.8	5	21 10½	18 0	8 10	7 10
Powder vans, 4-wheel .. .. .	10	7.3	10	21 4½	18 4½	8 5	7 11

TABLE IX  
Coaching Stock

Type.	Number available.	Tare (tons).	Maximum seating capacity or load.
1st class bogie (steel) ..	20	47.5	45
	18	45.6	45
	55	43	45
1st/2nd composite bogie (wooden):	14	43	24 and 32
	6	40	18 and 27
	14	40	18 and 27
	7	43	18 and 35
	4	45	18 and 27
	4	46	18 and 28
	18	45	18 and 36
1st/2nd composite bogie (steel).	31	43.6	18 and 36
2nd class bogie (wooden) ..	1	35	52
	3	28	47
	11	29	56
	1	31.5	56
	1	31	51
	28	42	72
	19	40	52
	13	43	59
	31	44	60
	1	31	48
2nd class bogie (steel) ..	10	44	59
2nd class bogie, with brake compartment.	3	46.5	45
3rd class bogie (wooden) ..	20	27	76
	21	33	76
	25	33	76
	1	34.4	51
	1	38.4	64
	13	35	78
	25	30.5	83
	10	38.5	107
	16	39.5	107
3rd class bogie (steel) ..	12	33	107
	60	37.5	107
3rd class bogie, with brake compartment.	10	28	72
	23	33	72
	15	—	82
	15	33	104
	35	38	104
	10	39.5	104

TABLE IX—*contd.*  
Coaching Stock—*contd.*

Type.	Number available.	Tare (tons).	Maximum seating capacity or load.
B.P.L.V.A. bogie .. ..	25	40	10 tons
	12	35	10 tons
	32	40.5	10 tons
	7	40	10 tons
	8	30	10 tons
B.P.L.V. bogie ( <i>i.e.</i> , no animal compartment).	7	40.5	—
	5	40	—
	10	39.5	—
	10	30	—
B.P. bogie .. ..	1	31	—
Ward cars (ambulance) ..	4	33	32
Stretcher car .. ..	1	33	30
Royal saloons .. ..	9	Various	—
Pullman cars, with kitchen	9	av. 45	av. 22
Pullman cars, without kitchen.	3	54	28
Restaurant cars .. ..	10	av. 36	av. 36
Sleeping cars .. ..	9	37	16
	8	53	16
	2	43	18
1st class coach, standard (6-wheel).	7	17	24
1st/2nd composite standard (6-wheel).	48	15	32
3rd class standard (6-wheel)	109	15.5	48
3rd class standard (6-wheel), with brake.	25	16	40
Miscellaneous (6-wheel), prison coaches, post vans, etc.	22	15	—
B.P.L. (6-wheel) .. ..	35	16	10 tons
Animal trucks (4-wheel) ..	44	9	10 horses
Horse boxes (4-wheel) ..	13	10	3 horses
	5	16.5	3 horses
Vegetable trucks (Shabaks), (6-wheel).	95	17.5	3½ tons
Special trucks (6-wheel) ..	6	15	8 tons
Covered motor car trucks (4-wheel).	8	12	5 tons
Open motor car trucks (4-wheel).	15	—	—
Coffin trucks .. ..	8	—	—

TABLE X  
Running Sheds

Stations.	No. of locomotives which can be handled.	Whether locomotives can be lifted.	Type of repairs carried out.
Assiut .. ..	2	No	Light
Aswan .. ..	4	No	Light
Bulaq el Dakrur ..	45	No	Light
Bulaq .. ..	120	Yes	Heavy
Hadra .. ..	30	No	Light
Gabbary .. ..	70	Yes	Heavy
Mansura .. ..	13	No	Light
Minya .. ..	50	Yes	Heavy
Saida Zenab ..	13	No	Light
Wasta .. ..	20	No	Light
Ismailia .. ..	20	No	Light
Luxor .. ..	40	No	Light
Port Said .. ..	5	No	Light
Sohag .. ..	40	No	Light
Suez .. ..	12	No	Light
Tanta .. ..	100	Yes	Heavy
Zagazig .. ..	30	No	Light
<i>Auxiliary Railways—</i>			
Beni Suef .. ..	6	No	Light
Minya West ..	23	No	Light
Mata'ana .. ..	19	No	Light

TABLE XI  
Cranes, Turntables, Triangles, and Breakdown Trains

Station.	Cranes.		Turntables.		Triangles.	Breakdown Trains (or Vans).
	Lifting Capacity in tons.	Type, Hand or Steam. Fixed or Travelling.	Diameter in feet and inches.			
			ft.	in.		
Aswan .. .. .	—	—	60	0	—	2 vans.
Assiut .. .. .	—	—	60	0	—	—
Bulaq el Dakrur .. .. .	{ 15	Steam, travelling	{ 60	0	—	1 train.
	10	Hand, travelling				
Bulaq, Cairo, shops .. .. .	4	Steam, travelling	{ 70	0	{	2 vans.
			46	6		
Dumyat .. .. .	—	—	47	0	—	—
Hadra .. .. .	—	—	70	0	—	1 van.
Hamam .. .. .	—	—	44	0	—	—
Mansura .. .. .	—	—	60	0	—	3 vans.
Minya (East) .. .. .	40	Steam, travelling	60	0	—	1 train.
Montaza .. .. .	—	—	33	6	—	—
	15	Steam, travelling				
Gabbary .. .. .	{ 40	Steam, travelling	60	0	—	2 trains and 3 vans.
	4	Steam, travelling				
Wasta .. .. .	—	—	60	0	—	1 train.
Ismailia .. .. .	15	Steam, travelling	46	6	—	1 train.
Idfina .. .. .	—	—	45	0	—	—
Kom Ombo .. .. .	—	—	52	7	—	—
Luxor .. .. .	15	Steam, travelling	60	0	—	1 train.
Nag Hamadi .. .. .	—	—	44	2	—	—
Qallin .. .. .	—	—	45	0	—	1 van.
Rashid .. .. .	—	—	44	2	—	—
Shirbin .. .. .	—	—	47	0	—	—
Sohag .. .. .	15	Steam, travelling	60	0	—	1 train.
Suez .. .. .	—	—	65	0	—	2 vans.

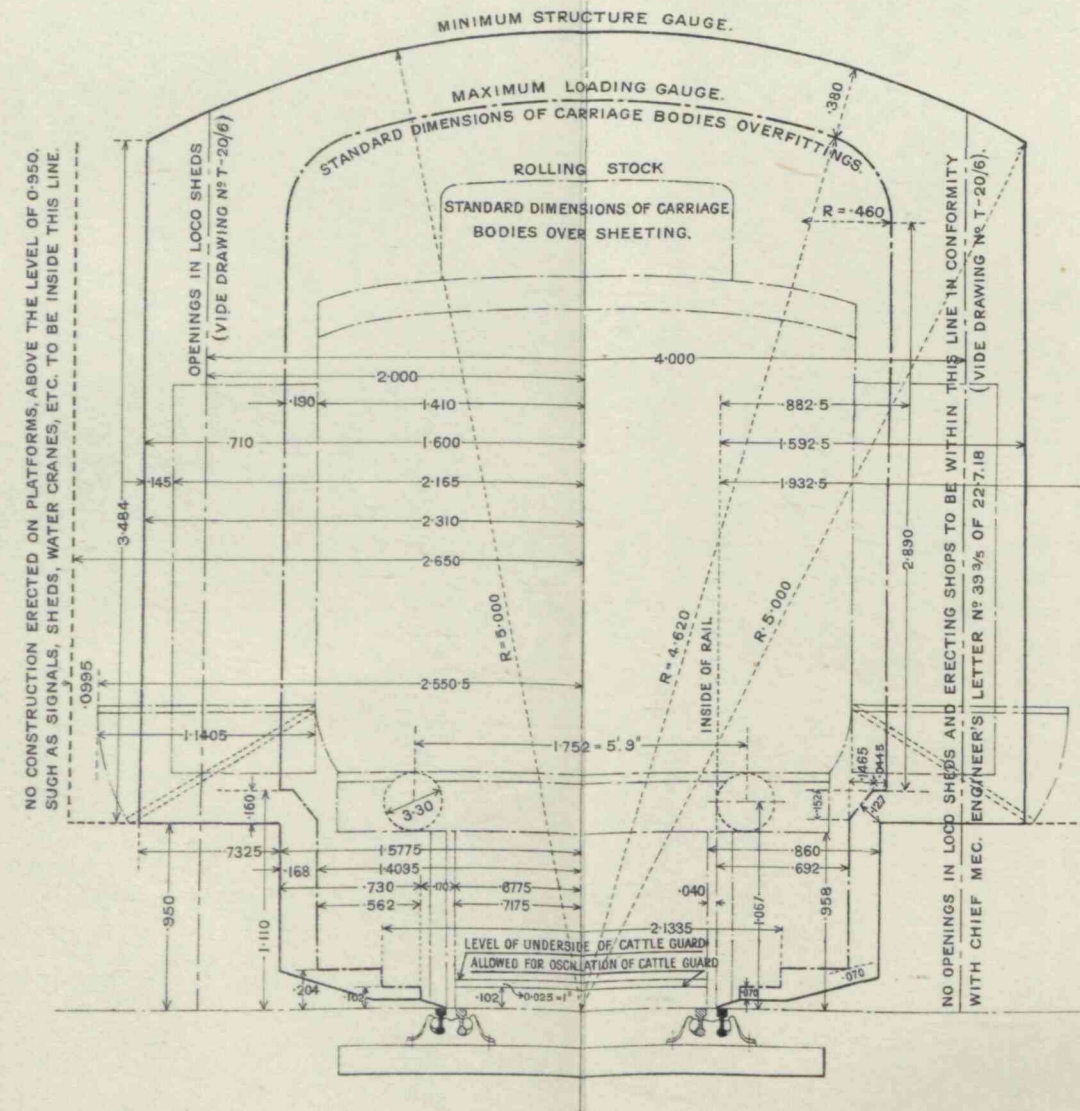
TABLE XI—*contd.*Cranes, Turntables, Triangles, and Breakdown Trains—*contd.*

Station.	Cranes.		Turntables.	Triangles.	Breakdown Trains (or Vans).
	Lifting Capacity in tons.	Type, Hand or Steam. Fixed or Travelling.	Diameter in feet and inches.		
Tanta .. .. .	15	Steam, travelling	ft. in. 72 0	Yes	1 train.
Zagazig .. .. .	15	Steam, travelling	60 0	Yes	1 train.
Bulaq, Cairo Division .. .. .	40	Steam, travelling	—	—	2 trains.
Gabbary shops .. .. .	15	Steam, travelling	—	—	—
Saida Zenab .. .. .	10	Steam, travelling	—	—	—
Guezireh .. .. .	10	Hand, travelling	—	—	1 train.
Benha .. .. .	10	Hand, travelling	—	—	—
Beni Suef .. .. .	—	—	—	Yes	1 van.
Cairo Marshalling Yard .. .. .	—	—	—	—	1 van.
Damanhur .. .. .	—	—	—	—	1 van.
Khatatba .. .. .	—	—	60 0	—	1 van.
Port Said .. .. .	—	—	—	—	1 van.
Tura .. .. .	—	—	—	Yes	3 vans.
Bashtil .. .. .	—	—	—	—	1 van.
Dabba .. .. .	—	—	—	Yes	—
Ezbet Urfi .. .. .	—	—	—	Yes	—
Raswa (Port Said) .. .. .	—	—	—	Yes	—
Mehallet Roh .. .. .	—	—	—	Yes	—
Nefisha .. .. .	—	—	—	Yes	—
Qaliub .. .. .	—	—	—	Yes	—
Shebin el Qanatir .. .. .	—	—	—	Yes	—
Talkha .. .. .	—	—	—	Yes	—
Zahriya .. .. .	—	—	—	—	—
Mersa Matruh .. .. .	—	—	—	Yes	—

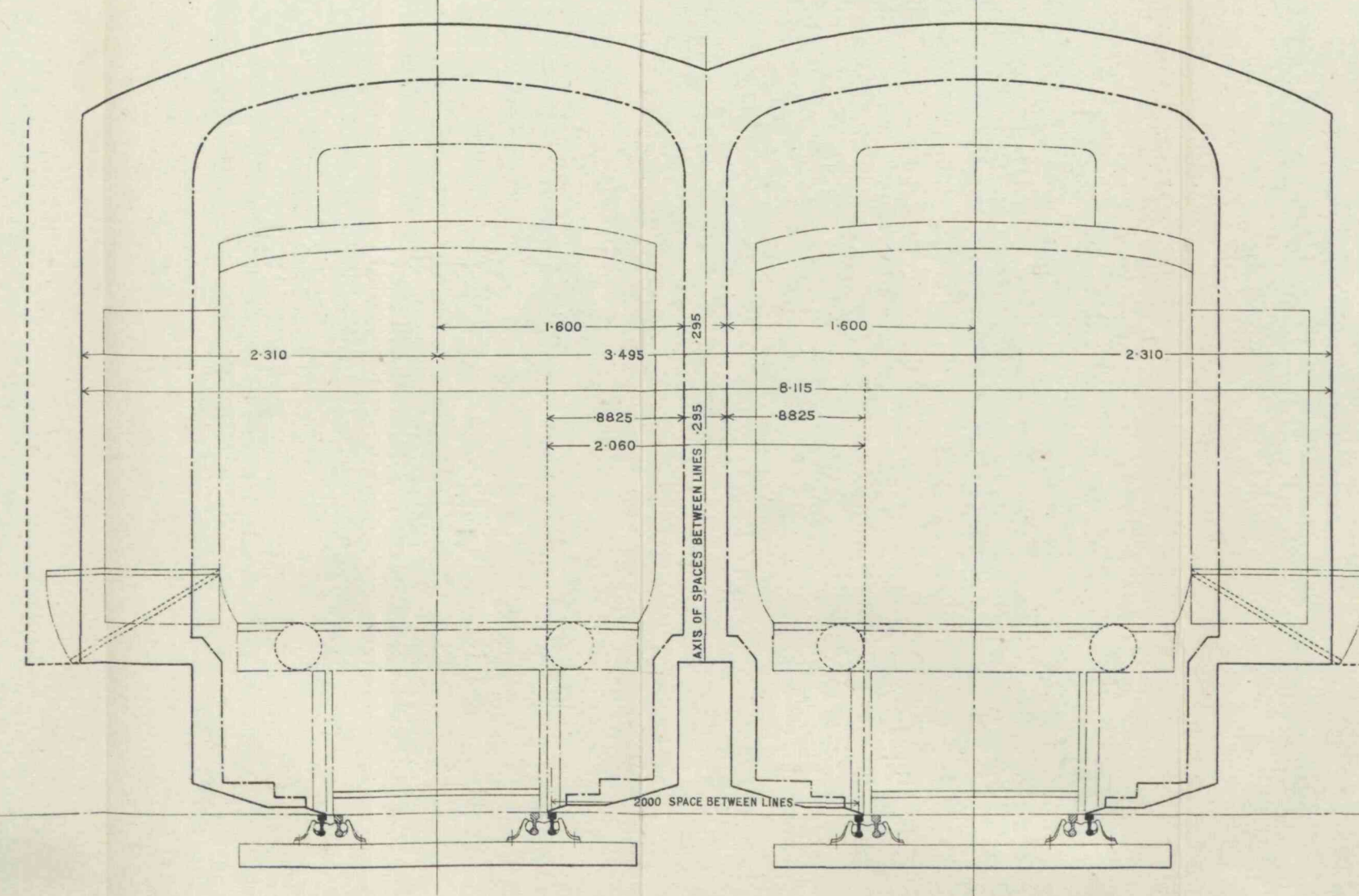
TABLE XII  
Mersa Matruh Railhead Depôts

Depôt.	No. of Sidings.	Length in metres.	No. of Loops.	Length in metres.	Remarks.
R.A.S.C. supplies ..	1	90	—	—	
Ammunition .. ..	1	90	—	—	Within depôt boundary.
		180	—	—	Total length of siding.
R.A.F. .. ..	1	80	—	—	Clear of loop.
	—	—	1	135	
Ordnance mobile workshop, Ramp siding.	1	75	—	—	Within depôt boundary.
	—	194	—	—	Total length of siding.
Ordnance field park ..	1	105	—	—	
R.E. stores .. ..	1	110	—	—	Clear of loop.
	—	—	1	180	

# SINGLE LINE.

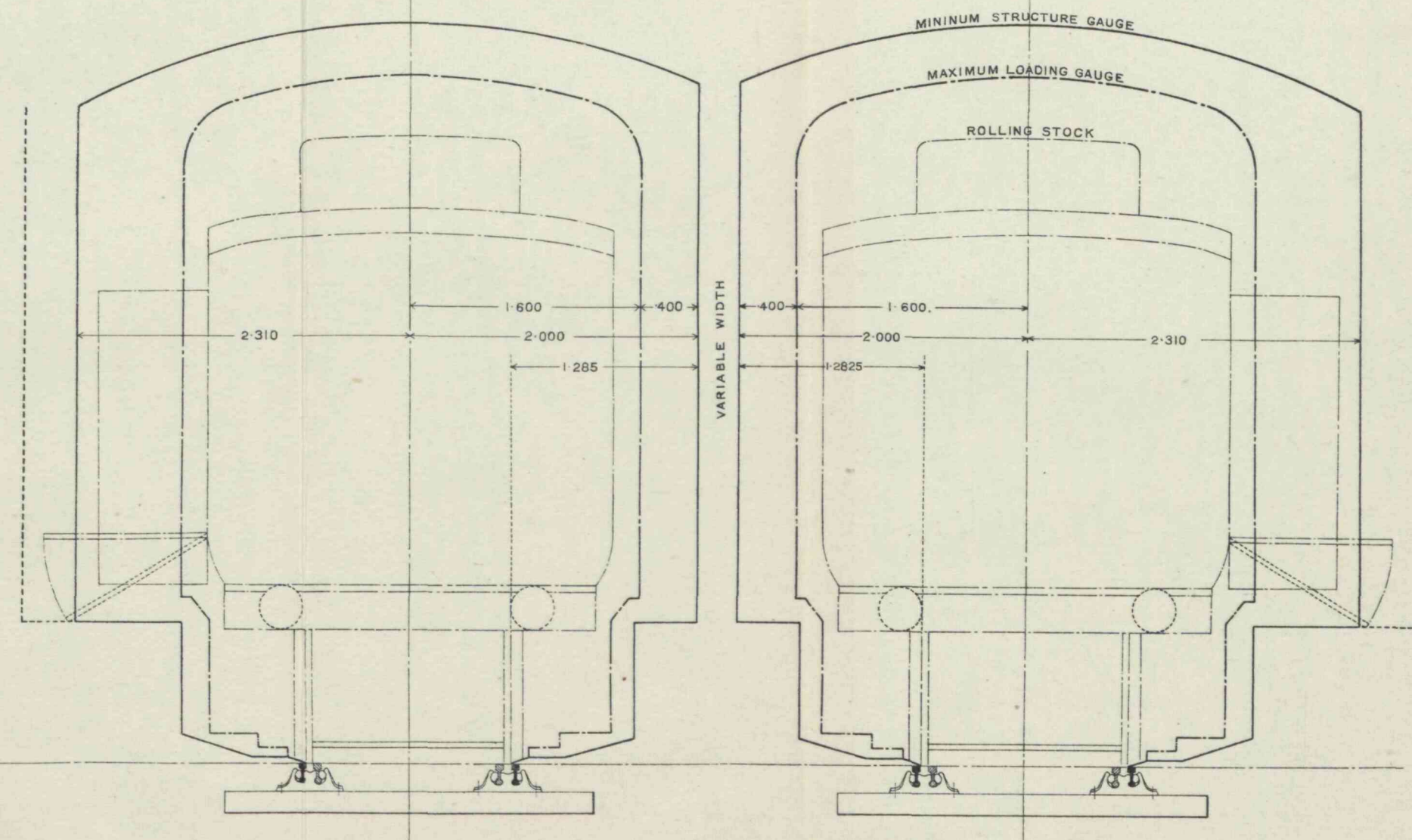


# DOUBLE LINE.



NOTE :- Dimensions are quoted in metres & decimals.

# STRUCTURES BETWEEN TWO LINES.



STRUCTURE & LOADING GAUGES.

## CHAPTER XIV

**TELEGRAPHS, TELEPHONES AND POSTAL***(See Map No. 9.)***General System.**

Principal Services, Egyptian State Telegraphs and Telephones, Marconi Company, Eastern Telegraph Company, other Telegraph or Telephone Communication Systems, Post Office, Broadcasting, Reuters.

**Principal Services in Detail.**

E.S.T. (Telegraphs), E.S.T. (Telephones), Marconi Company (Wireless), E.S.T. (Wireless), Eastern Telegraph Company (Cables), other Communication Systems :—Service, Markaz System, Frontiers Administration, Suez Canal Company, Wadi Natrun Line, Postal Services.

**Administrative Systems and Types of Employees.**

E.S.T., Marconi and Eastern Telegraph Company, Characteristics of Native Employees, European Employees.

**Lines.****Technical.**

Poles and Lines, Buried Cables, Telegraph Instruments and Equipment, Reserve Stores.

**Wireless Data.****1. General System**

The inter-communication system of Egypt is up-to-date and efficient, and compares favourably with the systems of European countries. The principal internal communications are now administered entirely by the Egyptian Government. External communications are still largely in the hands of private companies working in accordance with agreements with the Egyptian Government.

The principal services are as follows :—

Egyptian State Telegraphs and Telephones (E.S.T.), a department of the Egyptian State Railways, under the Ministry of Communications, is responsible for the principal telegraph and telephone lines. It is not possible to show all these on Map No. 9, but the Nile Valley and Delta are well served, and every village of any size has a telegraph office.

This department is also responsible for the Government Wireless Stations. These are mainly employed on internal communication, but the Cairo station works to Khartoum and the El Arish station to Palestine. Government stations also work to ships and aircraft.

*Marconi Company.*—Wireless to stations abroad. This company is to some extent amalgamated with the Eastern Telegraph Company.

*Eastern Telegraph Company.*—Cables to foreign countries and certain land lines across Egypt linking up their system.

*Other Telegraph or Telephone Communication Systems.*—

- (a) The Markaz Telephone System.
- (b) Frontiers Administration Lines.
- (c) Suez Canal Company's Lines and Wireless Stations.
- (d) Delta Light Railway Telegraph System.
- (e) Coastguards Administration Lines.
- (f) Irrigation Department's Lines.
- (g) Wadi Natrun Line of Egyptian Salt and Soda Co.

*Egyptian Post Office.*—A separate Department of the Ministry of Communications. Postal services only.

*Broadcasting.*—A monopoly of the Egyptian Government. Station erected by Marconi Company at Abu Za'bal, next to the main transmitting station. Operated from the Egyptian State Broadcasting studios in Cairo. There are also Broadcast Transmitting Stations at Cairo, Alexandria and Assiut.

Before describing the above services in detail, mention must be made of:—

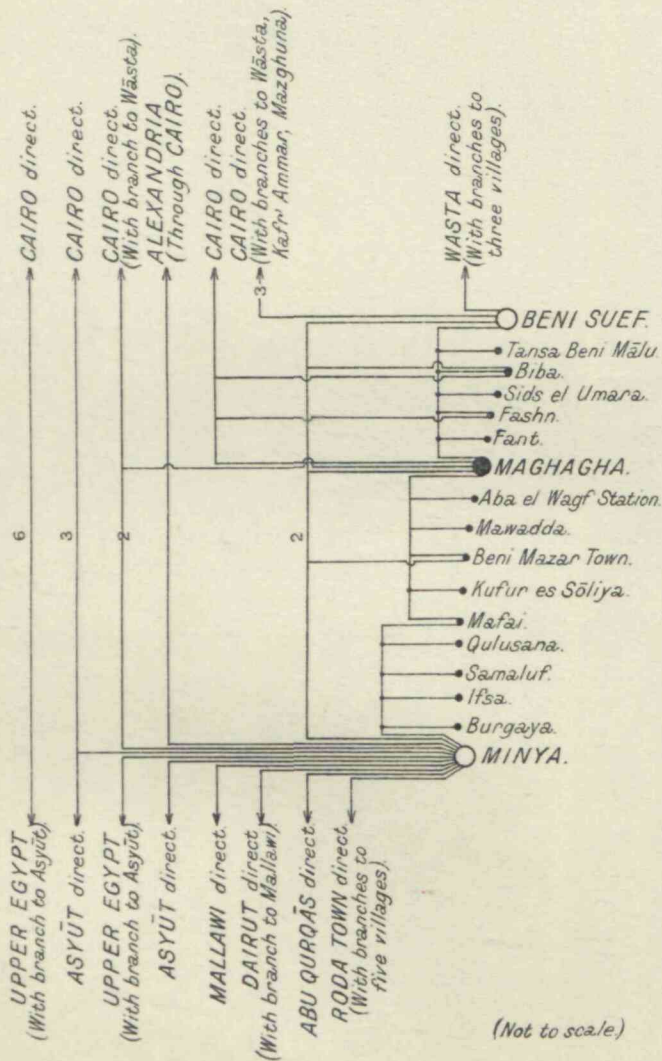
*Reuter's News Agency.*—Reuter's Telegrams are generally the first news to reach Egypt of events in the outside world. Telegrams come by wireless to Marconi Company's Office in Alexandria (where a special receiver is installed). They are then transmitted by special lines to Cairo, Port Said and Suez, and to Aswan and Luxor during the tourist season, and are available to the public within a few hours of the event reported. No such organisation being available for local news, it is not uncommon to find in Reuter's bulletin the first account of some important event in Cairo.

April, 1932.

# EGYPT.

Figure I.

THE TELEGRAPH OFFICES AND LINES BETWEEN BENI SUEF & MINYA.



(Not to scale.)

## 2. Principal Services in detail

The following notes are in amplification of Map No. 9, and no attempt is made to repeat information which can be more readily obtained from the map.

### (a) *E.S.T. (Telegraphs)*

Cairo Office	..	..	Avenue de la Reine Nazli.
Rail Traffic Office (large)			Cairo Station.
Railway Traffic Office			Bulaq el Dacrour.
			(smaller).
Alexandria Office	..		Menshiya.

(See plans of the above towns.)

Of the principal lines shown on Map No. 9, the Mersa Matruh-Siwa line is not used at present on account of the Cairo-Siwa wireless service. The Qantara-El Arish line is not used on account of the Cairo-El Arish wireless service.

Apart from the internal system, there are the following direct lines only partly in Egyptian territory :—

Luxor-Khartoum.  
Luxor-Wadi Halfa-Port Sudan.  
Cairo-Jerusalem.  
Cairo-Beyrouth.

The Palestine and Sudan lines provide an extensive service to other countries, which include Abyssinia, Eritrea, British and Italian Somaliland, Aden, Djibouti, Perim, Hedjaz, Yemen, Transjordan, Syria and Turkey-in-Asia.

There are about 536 public telegraph offices belonging to the E.S.T., about half of which (including all the larger offices) deal with traffic in European languages, as well as in Arabic. Fig. No. 1, opposite, showing the telegraph lines between Beni Suef and Minya, will serve as an example of the ramifications of the system.

In addition, there are connections with the Delta Light Railway Company's telegraph system, which has over 150 offices.

Apart from the offices which are open to the public, there are about 80 railway offices which deal only with railway traffic messages. There are also many lines of an official character, of which the most important are the lines provided for the use of the British troops, the Marconi Company and the Eastern Telegraph Company. There are also lines connecting the Suez Canal Company's offices at Suez and Port Tewfik with the E.S.T. at Suez.

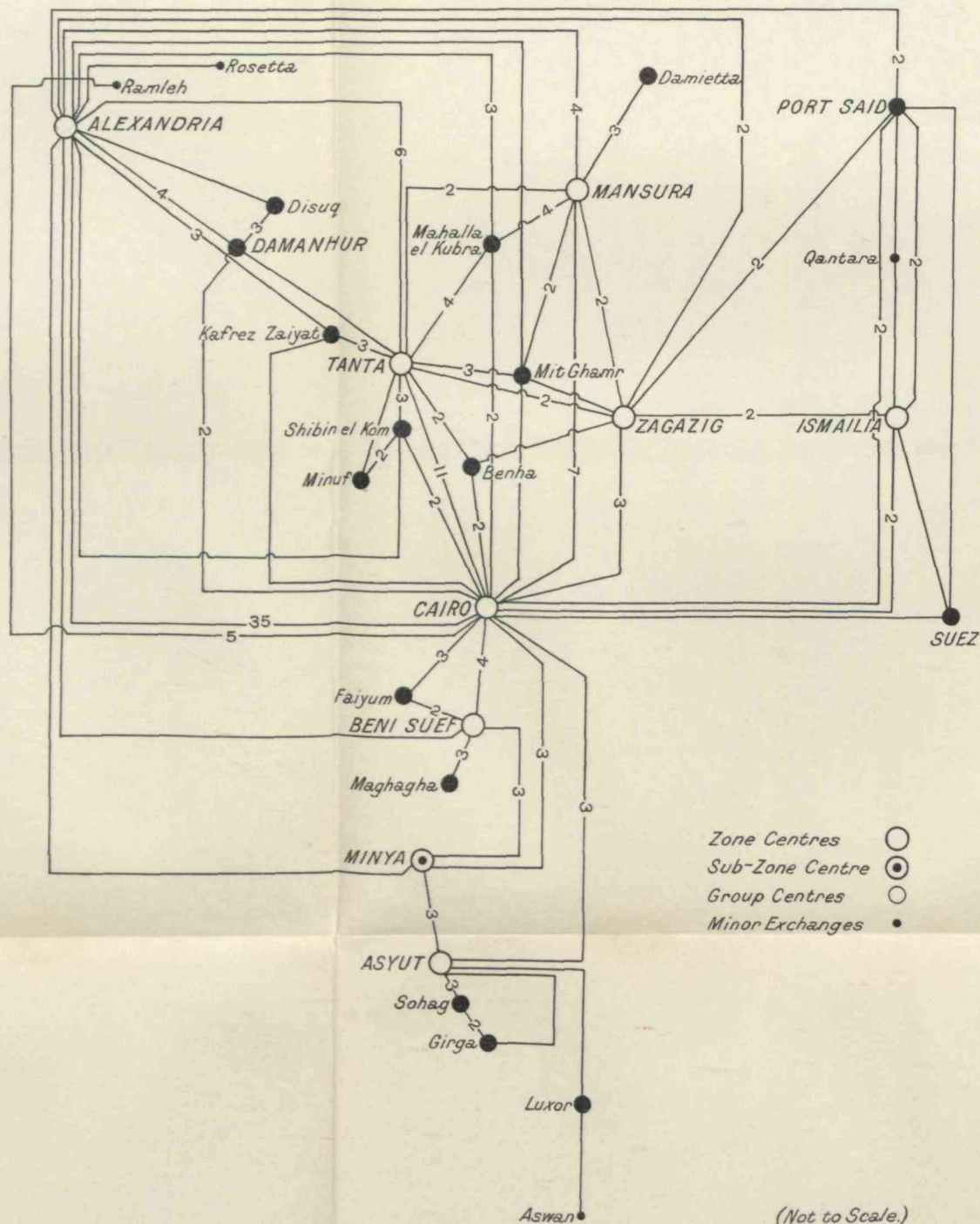
Technical details are dealt with in para. 5.

April, 1932.

Figure II.

# EGYPT.

THE PRINCIPAL TELEPHONE EXCHANGES AND TRUNK LINES.  
(Including all zone and group centres and four important minor exchanges.)



*(b) E.S.T. (Telephones)*

Compared with the telegraph, the telephone system of Egypt is less widely distributed, and there are twice as many telegraph offices as there are telephone boxes. A number of the larger villages, however, now have public telephones, and there is a growing network of exchanges throughout the country, adequately interconnected by trunk and junction lines. Outside the cultivated area and the Canal Zone, the following E.S.T. trunk lines exist :—

Alexandria—Burg el Arab—Gharbaniyat.  
 Alexandria—Amiriya.  
 Alexandria—Mersa Matruh.  
 Mersa Matruh—Salum.  
 Cairo—Faiyum (3 lines) via Beni Suef.  
 Beni Suef—Faiyum (2 lines).

There are also two lines from Ismailia to Lydda in Palestine. The Palestine service is now available to subscribers all over the country. It provides communication with 38 exchanges in Palestine and two in Transjordan.

The Radio Telephone service is at present confined to Cairo and Alexandria, but it is intended to extend it to other large towns.

The internal services are organized on the English system. The telephone exchanges in Egypt number 140 and are divided into eight zone centres and one sub-zone centre. These are again sub-divided into 16 group centres and 107 minor exchanges. Of these, 34 have less than 10 subscribers and, outside Cairo and Alexandria, only 14 have more than a hundred. In addition, there are in Cairo the Ministries' and Railways' exchanges, a trunk exchange and suburban exchanges at Heliopolis, Giza, Ma'adi and Helwan, while Alexandria has a suburban exchange at Ramleh.

Fig. No. II, opposite, shows the distribution of exchanges and trunk lines down to group centres.

The main exchange in Cairo is automatic. It has a capacity for 16,000 subscribers and could be extended to take 20,000. It has been found to work satisfactorily.

A new trunk exchange deals with over a hundred trunk lines which radiate from Cairo. This and the Railways exchange are housed in the main E.S.T. building. The main Central Automatic exchange is a separate building close by. The Ministries' exchange is at Bustan. (For exact locations, see Plan No. 1, Cairo, at the end of book.)

The automatic system has been used in the new Heliopolis exchange, and Giza will be converted in the near future. The exchanges in Cairo, Heliopolis and Giza will then together form one large system with a maximum capacity of 30,000 subscribers.

Outside Cairo, the automatic system is being extended to a few large towns. There is an automatic exchange at Mansura, with a capacity for 1,000 lines. Automatic exchanges have been installed at Port Said and Tanta. An automatic exchange has recently been completed in Alexandria, able to take 10,000 subscribers.

(c) *Marconi Company (Wireless)*

The Marconi stations are at—

*Abu Za'bal.*—Transmitting station, 16 miles north of Cairo on east bank of the Ismailia Canal. Large high-powered station of modern design with seven transmitters and a receiver for use in emergency.

*Ma'adi.*—Receiving station, 7 miles south of Cairo, on the edge of the desert to the east of the town.

These stations are remote controlled from the Cairo office and are each connected to it by four E.S.T. land lines. The four Ma'adi lines are part of the main buried cable from Cairo to Helwan, but those from Abu Za'bal are overhead.

The joint offices of the Marconi Company and Eastern Telegraph Company are off Sharia Kasr el Nil, Cairo, and at Alexandria in Rue du Télégraphe Anglais (*see* Plans of above towns).

Regular services are worked with six foreign capitals :—London (Marconi Co.), Paris (French Government), Rome (Italo Radio), Berlin (German Government), Vienna (Austrian Marconi Co.), Baghdad ('Iraqi Government).

The Radio Telephony service, which the company operates for the E.S.T., is worked to London (G.P.O.), Paris (a French company), Rome (Italo Radio), Berlin (German Government). A radio telephony service with 'Iraq is contemplated.

Most of the working is done on high frequencies, using different frequencies at different times of the day to get the best results. In the Cairo office, there are three receivers—one for high and two for low frequencies. A reserve transmitter is being designed for the same office, so that the company may be independent of land lines in an emergency.

In the Alexandria office is a receiver which intercepts news for Reuters, and one of the spare Cairo receivers will probably be used for the same purpose shortly.

In addition to those already mentioned, the company has the use of a special E.S.T. line between Cairo and Alexandria, and the Cairo office and Abu Za'bal are each connected by two lines to the Cairo Telegraph office.

Technical details are given in para. 5.

*(d) Government Wireless (E.S.T.)*

The Government wireless stations are at Cairo, Alexandria, Qosseir, Dakhla, Bahariya, Siwa, Mersa Matruh, El Arish and Tor.

*Cairo.*—The transmitting station is at Giza and, at present, only works to Khartoum on high frequency. The receiver is also there. The service which links Cairo with El Arish and the oases is at present operated, transmitted and received at the E.S.T. building in Cairo on high frequency.

The Egyptian Government proposes to take over the aircraft medium frequency service, at present operated by the R.A.F. If this is carried out, it will also be transmitted from Giza by remote control from Almaza Aerodrome. The service which links Cairo with El Arish and the oases will be eventually operated from a receiving station at Dimirdash, the transmission again being from Giza by remote control.

*Alexandria.*—The transmitting station is at Ras el Tin, operated by remote control from the receiving office in the new railway station (*see* Plan No. II, Alexandria). It works to aircraft and ships on medium frequency and to Qosseir on high and medium frequencies. It also communicates for aviation purposes with Benghazi, Yacht Imperia at Mirabella (Crete), Larnaca and Gaza.

The station at Qossier also works to ships.

At Tor, there is a small station, sometimes open during the pilgrimage season. On such occasions, it works to Qosseir and Cairo. At St. John's Island, there is also a small station which occasionally works to Qosseir, but is not regularly used.

The oases stations, Dakhla, Bahariya and Siwa, work direct with Cairo. They are also equipped to work with aircraft, but only Dakhla operates a regular air service.

El Arish works with Cairo, and also has a small portable set which provides touch with the Palestine Police at Jerusalem, Beersheba, Maan and Akaba.

At the Mersa Matruh Civil Aerodrome, there is a small wireless station for working with aircraft. There is also a new Government station (April, 1937) which operates a regular service with aircraft and can also work Cairo, but this service is not generally used.

A number of ships belonging to the Egyptian Government, mainly those of the Coastguards, and the Ports and Lights Administrations, are equipped with medium frequency apparatus. Two of the King's yachts are also so equipped. There are three mobile stations on lorries which can work on high or medium frequencies.

In addition to inland traffic, the Government stations accept telegrams for ships within a 400 miles radius of Alexandria or Qosseir. In certain cases where the range is too great, traffic can be sent *via* the coast stations of neighbouring countries, such as Port Sudan.

Technical details are given in para. 5 (b) and Table 1.

(e) *Eastern Telegraph Company's Cables*

Eleven cables reach Egypt from abroad, viz. :—

Alexandria (7).

5 from Malta, of which only 4 are used.

1 from Larnaca, Cyprus.

1 from Crete.

Suez (4) from Port Sudan.

Most of these cables form part of the All-Red Cable Route from Great Britain to the East.

The connection between Alexandria and Suez is by three submarine cables to Port Said and by buried cable thence to Suez.

There are two cable houses at Alexandria, situated at the point where the eastern arm of the breakwater leaves the shore and joined by underground cable to the company's building in Rue du Telegraph Anglais, where the receiving and relaying instruments are.

At Port Said, the cable house is about half-way along the main beach, nearly opposite the Italian hospital. No transmission is done from Port Said; the three cables from Alexandria land there and are connected straight through to two buried cables which run from Port Said to Suez, following the line of the railway. They are marked by small concrete posts every mile.

At Suez, they go straight to the cable station where they are connected to instruments. The Suez cable house on the Ataqā beach is connected to the cable station by two 14-core buried cables.

The company's cable offices are connected by their own land lines, a list of which is as follows :—

Benha—Cairo .. .. .	4 overhead lines.
Benha—Alexandria .. .. .	5 overhead lines.
Benha—Nefisha (railway line just west of Ismailia).	4 overhead lines.
Benha—Suez (via Nefisha) ..	1 overhead line.
Port Said—Suez .. .. .	2 21-core buried cables (see sub-para. (b) above).

All these land lines follow the railway.

There is no office at Benha ; it is merely the meeting point of a number of land lines and the headquarters of the Line Maintenance Section.

At Nefisha, four of the five lines from Benha are connected to spare cores in one of the buried cables.

There are also lines connecting with the E.S.T. at Cairo, Alexandria, Suez and Benha, and at Port Said the company's offices are connected to the land lines at the cable house by two overhead pairs.

The land lines leaving Cairo are buried cable as far as Abu el Ela (near the Bulaq) crossroads, following the route Shari Kasr el Nil—Shari Madabegh—Shari Fual el Awal. From Abu el Ela, the route is overhead. Where it passes the E.S.T. building, four lines branch off and enter the building. In emergency they can be connected up with the E.S.T. system.

The land lines into Alexandria are overhead. This is not found entirely satisfactory and it is proposed to divert the route.

The fourteen land lines running into Benha and the single line into Suez from Nefisha are overhead all the way to the offices.

#### (f) *Other Communication Systems*

(i) *British Service Communications.*—Generally speaking, these are outside the scope of this report and only such matters as bear indirectly on the civil system of the country will be mentioned—

A few local line circuits, in and around Cairo, operated by personnel of the Royal Corps of Signals and R.A.F., are hired from the E.S.T. The British Forces make use of the State telephones by hirings in the usual way.

R.A.F. signals operate a wireless meteorological service on behalf of the Egyptian Government. They also work with civil aircraft. The Egyptian Government propose to take over this service in due course.

(ii) *The Markaz System.*—There is an extensive network of lines to which every Markaz or police district is connected. All the lines of a province connect with the police headquarters at the Mudirya. Communication between provinces is by the ordinary E.S.T. system. The lines are maintained by the E.S.T. and, in many cases, run over E.S.T. routes. All the instruments are magneto ringing telephones.

(iii) *The Frontiers Administration System.*—With the exception of one important line of their own in Sinai (see Chapter VII—Sinai, para. 12), the Administration depends almost entirely on lines belonging to the E.S.T. to keep touch with their district headquarters and thence to frontier posts. The lines may be part of the State telegraph system or private lines rented by the Administration. In both cases, they are maintained by the E.S.T. The State telegraph lines are at the disposal of the F.A. when they close for normal traffic and, during these periods, are manned by F.A. personnel for certain fixed periods, which can be extended if necessary to deal with calls at any hour of the day or night.

The principal lines, other than those in Sinai (see Chapter VII), are as follows :—

Burg el 'Arab—Hammam.

Burg el 'Arab—'Amayid—Sidi 'Abd er Rahman—Dab's.

Salum—Sidi 'Omar.

Salum—The Fort.

'Amriya—Bahig, with extension to Burg el 'Arab.

Suez—Zeitiya—Kushk el 'Ataqa—'Ataqa Franconi—Dynamite—Sadat—Ghobit el Bos—Shihata—Abu Darag—Mallaha—Mersa Thelmet.

Gemsa—Hurghada—Safaga.

A number of these lines have metallic circuits. The lines from Suez to Mersa Thelmet and from Hurghada to Gemsa and Safaga are 200 lbs. per mile iron wire metallic circuits.

The Frontiers Administration also have their own wireless station at Kharga, Khanka and El Shatt for inter-communication purposes with detached posts, and for communication with Frontiers Mobile Stations. Service available to Cairo but not regularly used.

(iv) *Suez Canal Company's System.*—*Wireless.*—The company has two fixed wireless stations, at Ismailia and

Port Said, and three tugs equipped with wireless—the “Atlas,” “Titan” and “Hercule.” There is a short range set in reserve at Ismailia. The two fixed stations work with ships in and near the canal and with the company’s tugs. The Ismailia set (call letters SUQ) has a range of 140 miles. That at Port Said is a telephony set working up to 20 miles. It will also be used to work to the company’s pilot boats “Vigilant” and “Hardi,” which it is intended to equip with R/T when possible.

Ships entering the canal are instructed to put themselves in touch with the Ismailia Station on a 730 metres wavelength.

*Line Communications.*—The company has a private system of overhead lines running between Port Said and Port Tewfiq (Suez), connected with all intermediate canal company stations. Ninety per cent. of the traffic is telephony. There are manual exchanges at Ismailia, Port Said and Port Tewfiq. The Ismailia exchange is connected by two telephone circuits to the E.S.T. system.

Details of circuits, etc., of the above system are recorded at headquarters, British Troops in Egypt. The system is not available for use by any third party. It is understood that, except in very rough weather, the lines do not work to full capacity. A small supply of stores is maintained but if any extensive damage was done to the wireless systems or telephone system, it would be a long time before normal working could be restored.

(v) *Wadi Natrun Line.*—Is owned by the Egyptian Salt and Soda Company who operate and maintain it. It connects the following places by telephone :—

Khatatba Station (17 miles south-west of Shebin el Kom in the Delta).

Bir Victoria.

Manager’s House, Bir Hooker (Wadi Natrun).

Hamra Police Station (Wadi Natrun).

The circuit is metallic and made of iron wire, 2·5 mm. in diameter. It is magneto ringing and uses Leclanche batteries. It frequently goes wrong and is tampered with by nomad Arabs.

(g) *Postal Services*

It suffices to say that Egypt has an up-to-date postal system, with offices in all the principal towns and villages in the cultivated area. Regular inland letter and postal services are provided daily throughout the cultivated area and canal zone, and less frequently to outlying parts of the country.

Postal information is given in statistical form in Appendix 4.

The system is entirely under Egyptian control.

### 3. Administrative Systems and Types of Employees

#### (a) E.S.T.

*Employees.*—This is purely an Egyptian service and, though a number of Englishmen hold positions of importance, there is no guarantee that they will remain. Englishmen employed (1936) include the Inspector-General, Deputy Inspector-General, Traffic Manager, Chief Engineer, Superintendent of Radios, Superintendent of Broadcasting, Divisional Engineers of Cairo and Alexandria and five other important engineering posts. The remainder of the staff comprises of some 1,400 persons in the engineering department, 2,200 in the traffic department and 40 wireless operators.

*Administrative System.*—There are two principal departments—Engineering and Traffic—and the system is divided into four divisions, each with its divisional engineer and traffic superintendent, namely Cairo, Alexandria, Lower Egypt and Upper Egypt. Lower Egypt and Upper Egypt are further subdivided into districts :—

<i>Engineering Department.</i>		<i>Traffic Department.</i>	
<i>Lower Egypt.</i>	<i>Upper Egypt.</i>	<i>Lower Egypt.</i>	<i>Upper Egypt.</i>
Tanta.	Beni Suef.	Tanta.	Minya.
Mansura.	Minya.	Mansura.	Asyut.
Damanhur.	Asyut.	Zagazig.	
Benha.	Luxor.		
Zagazig.			
Ismailia.			

#### (b) Marconi and Eastern Telegraph Companies

*European Personnel.*—The Marconi and Eastern Telegraph Companies are both under British management. All the senior officials are British and so are many of the staff. Apart from the unskilled and daily paid staff, the remainder are mostly European. What natives there are in skilled posts are few and carefully chosen. Thus, provided that wireless and cable stations are protected, it is unlikely that the working of these services will be seriously affected by internal disturbances.

*Marconi Company.*—This company employs about 184 men and women of some 13 nationalities in skilled appointments.

The staff at Abu Za'bal consists of the engineer in charge and three assistant engineers, four watch keepers, about twelve Diesel engine attendants and forty unskilled natives (riggers, etc.). At Ma'adi, there is the engineer in charge and his assistant, five watch keepers and five unskilled natives. All the engineers at these stations are British, except for one Maltese. All the traffic staff are in Cairo, except for two telegraphists and fourteen messengers at Alexandria.

*Eastern Telegraph Company.*—This company employs about 214 men and women, of whom 43 are British and the remainder mostly local Europeans. The following table gives a rough idea of distribution :—

Office or Station.	Total Staff.	Approximate Distribution.
Cairo .. ..	36	20 telegraphists, 2 mechanics, and clerical staff.
Alexandria ..	136	4 superintendents, 7 engineers, 5 mechanics, telegraphists and clerical staff.
Suez .. ..	20	The superintendent, 10 telegraphists and relay watchers, 1 engineer, and 5 assistant engineers and 3 mechanics.
Port Said ..	10	The superintendent, 7 telegraphists and 2 clerical staff.
Benha .. ..	12	2 line engineers and 10 linesmen.

Any serious damage to cables can only be repaired by the cable ship, which may be far from Egyptian waters at the time. A simple break can be repaired locally if the water is not too deep and a tug can be hired. One such break was mended in the Red Sea fairly recently.

All the land lines are maintained by the company's line staff from Benha, who patrol the routes by rail.

#### (c) *Characteristics of Native Employ*

Though it might be thought difficult to teach an Egyptian with little education to operate a telegraph instrument, test and repair a line or wire up an exchange, in fact he is quick to learn and, in certain trades, such as cable jointing, he is as good as the Englishman and a quicker worker. The explanation for this aptitude is that he is a born imitator.

At the other end of the scale is the Egyptian University Engineering graduate. He is often a highly skilled engineer who understands a large wireless station or automatic exchange, but, like the latter, he is at his best when working automatically. Confront him with some unexpected happening and he will probably fail, for clear thinking and cool headedness are not his strong points. It would certainly be hard to imagine an efficient technical service from which Europeans were altogether excluded.

No Egyptian is in a hurry to throw away a good job for political ideals, but there is some risk of intimidation in the event of political troubles. In such circumstances, armed protection for the workers at an early stage might be of vital importance. Generally speaking, the natives employed by the private companies are less likely to be affected; they are carefully chosen and probably have greater inducements to remain loyal.

The telegraphists employed by the E.S.T. are trained at the Telegraph School at Dimirdash. A few of their engineers have studied at European Universities and a considerable number receive technical instruction at the E.S.T. headquarters in Cairo from British engineers. In capacity, the engineers trained locally are often found as proficient as those trained abroad.

*(d) European Employ*

It is unnecessary to discuss the highest grades, which consist of qualified competent men.

In the case of the general staff of the Marconi Company, a number of the staff are ex-service men discharged in Egypt, but this source is now almost closed. The majority of the local staff have worked their way up from the lower grades, the company giving instruction to anyone who wishes to get on. This is the only system of training available and the company would have great difficulty in replacing their staff at short notice.

The E.T.C. engineers are all trained in England, but nearly all the telegraphists have been trained by the company in Egypt and would be equally difficult to replace.

**4. Lines. (Whether Underground or Overhead)**

*(a) Eastern Telegraph Company. (See para. 2 (e).)*

*(b) E.S.T. Telegraphs and Telephones*

These are best considered under one heading, as in many cases they follow the same route and use the same poles.

All important lines in the Delta and Nile Valley follow the railway.

All lines are overhead with the following exceptions :—

(i) A buried cable from Cairo to Alexandria via Tanta almost entirely used for telephone circuits. It joins the railway at Shubra (northern district of Cairo) and is marked by small concrete posts at each cable junction.

(ii) Certain local lines between towns and their suburbs, the principal of which are the big junction cables from Cairo to Heliopolis and from Cairo to Ma'adi.

(iii) In Cairo, Alexandria and a few other large towns, the local distribution lines and the feeders for the main trunk routes.

In Cairo, the Upper Egypt trunk route is buried as far as Bulaq el Dakrur (near Giza), crossing the Nile by submarine cable at Imbaba Bridge. The Lower Egypt route is buried to a point  $1\frac{1}{2}$  miles north of Cairo Station, but the cable will probably be extended before long. Some important lines leave Cairo by the Khedive Ismail and English Bridges.

The Nile and the bigger canals are crossed by submarine cables ; the principal crossings outside Cairo are as follows :

The Nile at Benha, Kafr el Zaiyat, Nag'Hammadi and Luxor.

The Suez Canal at Qantara (2 cables), Port Said (to Port Fuad) and Suez.

## 5. Technical

### *E.S.T. Telegraphs and Telephones*

*Poles and Lines.*—Poles are either mounted on steel rails or creosoted. They are imported.

Most of the overhead telegraph lines are 200-lb. per mile copper\*wire, some 300-lb. copper and a few 400-lb. iron.

*Buried cables.*—The buried line from Cairo to Alexandria is built up as follows :—

- 10 pairs of 40-lb. per mile wire.
- 28 pairs of 70-lb. per mile wire.
- 8 pairs of 135-lb. per mile wire.

*Telegraph instruments and equipment.*—In Cairo and Alexandria, the most up to date available. In the larger provincial towns, instruments of the latest types are being gradually introduced.

The following telegraph systems are in use :—

Buzzer.  
 Morse recorder, simplex or local sounder.  
 Sounder simplex open or closed.  
 Sounder duplex, S.C.  
 Sounder duplex, D.C.  
 Sounder quadruplex.

Wheatstone is no longer used, but could be re-introduced if desired.

The following table shows roughly how these instruments are distributed at present :—

Type of Line.	System used.
Long lines .. ..	At a few large offices—Quadruplex. At other offices—Duplex S.C. or D.C.
Shorter lines—direct connection between towns.	Morse recorder simplex or local sounder.
Local lines to villages— Upper Egypt (south of Wasta).	Buzzer.
Lower Egypt (and north of Wasta).	Simplex, closed.

A few outlying places and nearly all the railway traffic offices use telephones.

*Telephone instruments and equipment.*—The telephone system in most parts of the country is magneto ringing ; only in one or two cases is it common battery, but, as time goes on, common battery exchanges will be installed in the larger provincial towns. The present Alexandria exchange battery is central battery signalling. The manual exchanges vary considerably in design.

The Cairo automatic exchanges work on the " Rotary " principle and are made by the Standard Cable and Telephone Company. The new Alexandria exchange will be on the same principle. The Cairo automatic exchanges are really part of one system with nine possible divisions of 10,000 subscribers each. Power is derived from two banks of 50-volt, 4,000 ampere-hour batteries, one of which is used

at a time, whilst the other is on charge, for which purpose there are two 34-kilowatt motor generators, 51-57 volts, 600 amperes. The motors require 200 volts which is normally obtained from the town mains, but should this fail, there is another generator driven by a 90-h.p. Gardiner petrol engine.

The Mansoura Exchange is designed on the "Strowger" principle and made by the Automatic Telephone Company. The Tanta and Port Said exchanges are also "Strowger" principle but made by Siemens.

In all exchanges, C.B., C.B.S. or automatic, the power is supplied on the same principle as in Cairo, *i.e.*, two banks of batteries, each charged in turn by a motor generator, working from the mains or by an engine-driven generator in emergency.

There are telephone repeaters at Cairo, Tanta, Mansoura, Ismailia, Asyut and Luxor. All are made up locally, except the new repeating station at Tanta, which was made by the General Electric Company.

*Reserve Stores.*—These are held by the Egyptian State Railways in their depôt at Bulaq (Cairo). The stores are mostly obtained from England (Standard Cable and Telegraph Company) and adequate stocks are maintained to meet everything but wholesale destruction. The chief exceptions are cables, which come mainly from Germany, and telegraph poles from Czechoslovakia.

## 6. Wireless Technical Data

Technical data of all wireless stations in Egypt are given in Table I following. Fuller details are recorded at Headquarters, British Troops in Egypt.

It will be noticed that the frequencies actually used are not given. They are liable to be varied from time to time and, in the case of high frequency stations, different frequencies are used at different times of day. They are fully recorded in the Berne List.

The Marconi transmission is automatic—from 100 to 150 words a minute. The instruments used are—

Creed Keyboard perforator.

Wheatstone Transmitter.

Marconi Undulator, Type U.G. 6.

The Government wireless stations are all hand-speed.

TABLE I.—Wireless Stations in Egypt—Technical Details

## 1. Government Wireless Stations

## (a) Fixed Stations

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Serial.	Station.	Call.	Instrument.	Aerial Power.	Frequency Range (kc/s.)	Type of Transmission.	Remarks.
1	Cairo—	SUA	Transmitter	2 kw.	500–125	C.W. 1 C.W.	(a) Power from town supply, 220 volts A.C. (b) Serials 1, 2, 10 and 11 for aircraft, 3 and 6 for Khartoum, 7, 8 and 9 for Oases and El Arish. 4 spare. 5 not used. (c) The lay-out of these stations will shortly be changed.
2	Giza .. ..		"	2 kw.	500–125	C.W. 1 C.W.	
3	" .. ..		"	$\frac{1}{2}$ kw.	20,000–4,286	C.W. 1 C.W.	
4	" .. ..		"	$\frac{1}{2}$ kw.	20,000–4,286	C.W. 1 C.W.	
5	" .. ..		—	$\frac{1}{2}$ kw.	1,000–500	Broadcasting	
6	" .. ..		Receiver	—	1,500–60	—	
7	E.S.T. Building ..		Transmitter	100 Watt	15,000–5,000	C.W.	
8	" .. ..		Receiver	—	15,000–3,000	—	
9	" .. ..		"	—	15,000–3,000	—	
10	Almaza Aerodrome		"	—	1,500–30	—	
11	" .. ..		"	—	1,500–30	—	
12	Alexandria—	SUH	Transmitter	1 $\frac{1}{2}$ kw.	1,000–100	C.W. 1 C.W.	(a) Power from 110 volt D.C. generators driven by Thornycroft engines. (b) Serials 12, 13, 14, 21 and 22 for ships, 13, 16, 23 and 24 for Qosseir, 17, 18 and 20 for aircraft. 19 not used.
13	Ras el Tin ..		"	2 kw.	500–75	1 C.W.	
14	" .. ..		"	$\frac{1}{2}$ kw.	600–100	C.W.	
15	" .. ..		"	$\frac{1}{2}$ kw.	600–100	C.W.	
16	" .. ..		"	$\frac{1}{2}$ kw.	20,000–4,286	1 C.W. C.W.	
17	" .. ..		"	$\frac{1}{2}$ kw.	600–100	1 C.W. C.W.	
18	" .. ..		"	200 Watt	600–100	C.W.	
19	" .. ..		"	200 Watt	1,000–500	Broadcasting	
20	" .. ..		Receiver	—	1,000–30	—	
21	Receiving Office..		"	—	1,000–30	—	
22	" .. ..		"	—	1,000–30	—	
23	" .. ..		"	—	15,000–3,000	—	
24	" .. ..		"	—	15,000–3,750	—	

TABLE I.—Wireless Stations in Egypt—Technical Details—*contd.*1. Government Wireless Stations—*contd.*(a) Fixed Stations—*contd.*

(1) Serial.	(2) Station.	(3) Call.	(4) Instrument.	(5) Aerial Power.	(6) Frequency Range (kc/s.).	(7) Type of Transmission.	(8) Remarks.
25	Qosseir .. ..	SUK	Transmitter	1½ kw.	600-100	C.W. 1 C.W.	(a) Power from Phosphate Co. 220 volts A.C. (b) Serials 25 and 28 for ships, 26, 27 and 29 for Alexandria.
26	" .. ..		"	1½ kw.	600-100	C.W. 1 C.W.	
27	" .. ..		"	100 Watt	15,000-3,333	C.W.	
28	" .. ..		Receiver	—	1,500-30	—	
29	" .. ..		"	—	15,000-3,000	—	
30	Dakhla .. ..	SUD	Transmitter	200 Watt	1,000-188	C.W.	(a) Power from 100 volt D.C., 3 kw. generator driven by 5 h.p. (b) Serials 30 and 33 for aircraft, 31 and 34 for Cairo. 32 spare.
31	" .. ..		"	100 Watt	15,000-5,000	C.W.	
32	" .. ..		"	200 Watt	750-125	C.W.	
33	" .. ..		Receiver	—	1,500-30	—	
34	" .. ..		"	—	15,000-3,000	—	
35	Bahariya .. ..	SUB	Transmitter	200 Watt	750-125	C.W.	(a) As for Dakhla. (b) Serials 35 and 37 for aircraft when specially required. 36 and 38 for Cairo.
36	" .. ..		"	100 Watt	15,000-5,000	C.W.	
37	" .. ..		Receiver	—	1,500-30	—	
38	" .. ..		"	—	15,000-3,000	—	
39-42	Siwa .. ..	SUE			This station is almost identical to the station at Bahariya.		
43	El Arish .. ..	SUF	Transmitter	60 Watt	750-125	C.W.	(a) Power from a 110-volt D.C. generator driven by a National petrol engine. (b) Serials 43 and 45 for the Palestine Police (portable set), 44 and 46 for Cairo.
44	" .. ..		"	100 Watt	15,000-5,000	C.W.	
45	" .. ..		Receiver	—	750-125	—	
46	" .. ..		"	—	15,000-3,000	—	
47	Tor .. ..	SUT	Transmitter	200 Watt	750-125	C.W.	(a) Power from Quarantine supply, 220 volts. (b) The station works occasionally with Cairo and Qosseir.
48	" .. ..		Receiver	—	1,500-30	—	

TABLE I.—Wireless Stations in Egypt—Technical Details—*contd.*1. Government Wireless Stations—*contd.*(b) *Three Mobile Stations in Lorries*

(1) Serial.	(2) Station.	(3) Call.	(4) Instrument.	(5) Aerial Power.	(6) Frequency Range (kc/s.).	(7) Type of Transmission.	(8) Remarks.
49 53 57	—	—	Transmitter	200 Watt	500–140	C.W. 1 C.W.	(a) Power from double armature 2-field generator driven by single cylinder petrol engine. (b) The three stations are almost identical.
50 54 58	—	—	"	20 Watt	15,000–6,000	C.W. 1 C.W.	
51 55 59	—	—	Receiver	—	1,000–30	—	
52 56 60	—	—	"	—	15,000–3,750	—	

(c) *Mobile Stations in Ships*

61	"Aida" .. ..	SUAF	Sets complete with transmitter and receiver.	Various from 100 Watt to 1½ kw.	From about 750–250 in all cases.	C.W. 1 C.W. Spark C.W. 1 C.W. spark Spark C.W. 1 C.W. Spark " " "	(a) Power (except Serials 64 and 70) from ships' mains. Bat- teries charged from mains. Serials 64 and 70 get power from single cylinder engines and batteries are charged ashore.
62	"El Amir Farouk"	SUAG					
63	"El Amira Fawzia"	SUAK					
64	"Kamar" .. ..	SUAD					
65	"Mabahees" ..	SUAO					(b) Serials 61 and 66, Ports and Lights Admin., 67, 69 and 70 Coastguards Admin., 62 cruiser, 63 investigation ship, 64 pilot ship, 65 research ship, 68 tug boat.
66	"Managim" ..	SUAJ					
67	"Naphtis" ..	SUAL					
68	"Pharos" .. ..	SUAN					
69	"Sollum" .. ..	SUAH					(c) The King's Yachts "Mah- roussa" and "Kassed Kheir" are also equipped with wireless.
70	"Teir el Bahr" ..	SUAP					

TABLE I.—Wireless Stations in Egypt—Technical Details—*contd.*  
2. Marconi Wireless Stations

(1) Serial.	(2) Station.	(3) Call.	(4) Instrument.	(5) Aerial Power.	(6) Frequency Range (kc/s.).	(7) Type of Transmission.	(8) Remarks.
71	Abu Za'bal ..	SUR	Transmitter	4 kw.	6,780	Modulated C.W.	(a) Power for Abu Za'bal from 220 volt D.C. generators driven by Mirless, Bikerton and Day engines, three 225 h.p. and one 40 h.p. air injection engine.
72	" .. ..	SUX	"	5 kw.	7,869-7,851	R/T	
73	" .. ..	SUY	"	2 kw.	7,825	Modulated C.W.	
74	" .. ..	SUV	"	5 kw.	10,055	Modulated C.W. and R/T.	
75	" .. ..	SUW	"	2 kw.	11,910	Modulated C.W.	
76	" .. ..	SUZ	"	5 kw.	13,829-13,811	R/T	
77	" .. ..	SUC	"	2 kw.	13,940	Modulated C.W.	
78	" .. ..		Receiver	—	—	—	
79-83	Ma'adi .. ..		Receivers	—	21,429-4,615	—	(c) Aerials for serials 74 and 76 directional on England; 3 aerials at Ma'adi directional on England and 2 on Baghdad; remainder omni-directional.
84-86	" .. ..		"	—	21,429-3,750	—	
87-88	" .. ..		"	—	120-30	—	
89	" .. ..		Receiver	—	50-10	—	
90	Cairo Office ..		Receiver	—	21,429-6,000	—	(d) Serial 78 for emergency; 93 for Reuter's news service.
91	" .. ..		"	—	30-16.7	—	
92	" .. ..		"	—	30-15	—	
93	Alexandria Office ..		Receiver	—	—	—	

(a) Power for Abu Za'bal from 220 volt D.C. generators driven by Mirless, Bikerton and Day engines, three 225 h.p. and one 40 h.p. air injection engine.

(b) Power for Ma'adi from batteries charged from battery station, charged in turn from single cylinder Crossley Diesel engines.

(c) Aerials for serials 74 and 76 directional on England; 3 aerials at Ma'adi directional on England and 2 on Baghdad; remainder omni-directional.

(d) Serial 78 for emergency; 93 for Reuter's news service.

(e) Serials 72 and 76 can work R/T one at a time. 74 can work R/T at any time.

TABLE I.—Wireless Stations in Egypt—Technical Details—*contd.*

## 3. Suez Canal Company's Wireless Stations

(1) Serial.	(2) Station.	(3) Call.	(4) Instrument.	(5) Aerial Power.	(6) Frequency Range (kc/s.).	(7) Type of Transmission.	(8) Remarks.
94	Ismailia .. ..	SUQ	Complete set	250 Watt	500-333	1 C.W.	<p>(a) Power—no information available.  (b) Serial 95 is a reserve set.  (c) Serials 94-96 work to ships in and near canal and to Company's tugs.  (d) It is proposed to equip pilot boats "Vigilant" and "Hardi" with R/T sets for working with Port Said on 1,622 kc/s.  (e) Approximate ranges: Serial 94, 140 miles. 96, 20 miles. 97, 400 miles. 98 and 99, 110 miles.</p>
95	" .. ..		"	75 Watt	500-333	Spark	
96	Port Said .. ..	SUP	"	50 Watt	{ 1,677-1,304 545-462 }	R/T	
97	Tug "Atlas" ..	SUBN	"	1,000 Watt	545-143	1 C.W.	
98	Tug "Titan" ..	SUBO	"	250 Watt	545-333	1 C.W.	
99	Tug "Hercule" ..	SUBP	"	250 Watt	545-333	1 C.W.	

## CHAPTER XV

## COMMUNICATIONS BY AIR

(Reference Map No. 1.)

## External.

Imperial Airways.

Routes, Aircraft, Bases, Personnel.

K.L.M. (Royal Dutch Air Lines).

Route, Aircraft.

Italian ("Ala Littoria").

Route, Aircraft.

## Internal.

Misr Airworks (S.A.E.).

General, Almaza Flying School, Routes, Aircraft,  
Personnel, Service Stations.

Table of Aircraft.

## EXTERNAL AIR ROUTES

## 1. Imperial Airways

## (a) Routes

There are two principal routes—London to Australia and London to Cape Town. Both these routes pass through Egypt and are run twice weekly in either direction.

(i) *Brindisi to Egypt*.—This sector is operated entirely by flying boats. Flights are frequently undertaken in the dark and special equipment is provided for this purpose.

(ii) *Egypt to Karachi*.—This sector is operated by land aircraft and the principal stopping places are Cairo, Gaza, Baghdad, Basra, Karachi.

(iii) *Egypt to Kisumu (Kenya Colony)*.—The principal stopping places are Wadi Halfa, Khartoum, Juba, Entebbe, Kisumu.

The continuation of the main route from Johannesburg to Cape Town is operated by "South African Airways."

(iv) *Subsidiary Extension*.—Penang-Hong Kong. This sector is operated once weekly in each direction connecting with the main east or west-bound service, land aircraft are used and the route followed is Penang-Saigon-Tourane-Hong Kong.

(v) *Subsidiary Extension*. — Khartoum - Lagos (Nigeria). This sector is operated once weekly in each direction connecting with the main north and south-bound service. The route followed is Khartoum-El Obeid-Geneina, Kano-Minna-Lagos.

(b) *Aircraft*

Particulars of the aircraft employed, including reserve aircraft, are shown in Table A, Part I, at the end of this chapter. All aircraft are fitted with dual control and carry W/T, and could be used for troop carrying and possibly bombing. All equipment, aircraft and engines are British throughout.

(c) *Bases*

At the present time (1936) there are two bases in Egypt :—

(i) *Heliopolis (Cairo)—The Land-plane Base*.—This is situated within the Royal Air Force Camp and includes fully equipped workshops capable of dealing with complete overhauls of airframes and engines.

*Note*.—Imperial Airways will operate from Almaza Aerodrome, which is the Egyptian airport, as soon as accommodation is available.

The British staff consists of approximately 60 persons and there are, in addition, some 100 local employees.

(ii) *Alexandria—The Seaplane Base*.—This is situated in the harbour at Ras-el-Tin. Similar facilities exist as at (i) above, but on a smaller scale. There is a slipway and mooring buoys. There are approximately 25 British staff and 25 local employees, but these figures vary according to the exigencies of work.

*Note*.—Passengers, mail and freight which arrive by flying-boat are transferred to land planes at Dekheila (Alexandria) Aerodrome, from whence they proceed by the Cape or Australian routes.

*(d) Personnel*

A large number of the personnel have been recruited from the Services, particularly the Royal Air Force. The staff is comprised of men who are physically fit and capable of sustained effort.

**2. (K.L.M. Royal Dutch Air Lines)**

This company has no aircraft based on Egypt, but two aircraft on the Amsterdam-Batavia service pass through Egypt every week in each direction by the route El Dekheila (Alexandria)-Gaza-Baghdad.

Particulars of the aircraft employed are given in Table A, Part 2, at the end of this chapter.

**3. Italian ("Ala Littoria")**

An Italian air line, known as the "Ala Littoria," runs a thrice weekly two-way service from Rome to Cairo, via Syracuse and Benghasi, and a thrice weekly two-way service from Cairo to Addis Ababa, via Wadi Halfa, Khartoum, Kassala and Asmara.

Particulars of the aircraft employed are given in Table A, Part 3, at the end of this chapter.

**INTERNAL AIR ROUTES****4. Misr Airwork (S.A.E.)***(a) General*

Misr Airwork (S.A.E.) is an Anglo-Egyptian company, formed by Royal Decree, and granted an authorization by the Egyptian Government to develop Egyptian flying commercially; 60 per cent. of the capital is Egyptian and 40 per cent. British.

British material and personnel are given preference over those of other nations, the policy being to employ mainly Egyptian and British personnel.

There is no intention on the part of the company to enter into competition with Imperial Airways, Ltd., or other companies. The company now, however, run services out of the country and will consider running additional external services which may prove necessary to its future development.

Under its control it has one flying school at Almaza. Formerly, schools were run at Dekheila (Alexandria) and Port Said. Plans for their reopening are before the Government of Egypt.

(b) *Almaza Aerodrome Flying School*

This consists of a flying school, where candidates of all nationalities are taught flying. There is, at present, one Egyptian instructor, who holds the Guild of Air Pilots and Navigators Instructors' Licence, and who is in charge of all instruction. He has an Egyptian assistant, who has undergone the Pilots Instructors' Course at Air Service Training, Hamble. More instructors will be employed when the demand increases.

The school started in June, 1932. At the present time there are some 260 members. Of this number, some 32 have current licences, 28 of whom obtained them with the school. Some pupils and members have their own machines.

(c) *Routes*

There are at present five routes in operation by the company :—

(i) *Cairo-Alexandria*.—A return service three times daily. Passengers are picked up in Cairo by the company's buses and conveyed to Almaza. Transport is also provided between Dekheila Aerodrome and Alexandria.

(ii) *Cairo-Port Said-Lydd-Haifa*.—A return journey once daily. Ground transport is provided as in the case of (i) above.

(iii) *Cairo-Asyut-Luxor-Aswan*.—A once-weekly service during the winter season only. Ground transport as before.

(iv) (a) *Cairo-Lydd-Nicosia (Cyprus)*.—This service is operated seasonally during the summer, but is now part of the new Cairo-Baghdad service. Aircraft are diverted from Haifa to Cyprus, Cyprus to Cairo, instead of flying Haifa-Cairo during the summer months. The service during the season is once weekly in each direction.

(iv) (b) Cairo - Port Said - Lydda - Haifa - Rutba - Baghdad. (Summer season via Cyprus, in addition, as set out in (iv) (a) above). This service is once weekly in each direction, Cairo-Baghdad, and in addition there are flights once weekly in each direction between Baghdad and Haifa. This shuttle service connects with the Cairo-Haifa service (ii) above, which thus gives a twice-weekly connection between Egypt and Iraq.

(v) *Alexandria-Port Said-Cairo-Asyut*.—A return service once daily.

#### (d) *Aircraft*

The Cyprus and Baghdad services, and during the tourist season the Palestine service, are worked by D.H.86 Express type, 4-engined air liners. The remaining routes are operated with D.H.89 Rapide type aircraft.

Particulars as to capacity, range, etc., will be found in Table A, Part 4, at the end of this chapter.

All these aircraft are based on Almaza Aerodrome.

#### (e) *Personnel*

In addition to the Egyptian instructor and his assistant employed by this company, there are nine further British "B" licence pilots and three Egyptian "B" licence pilots. The engineering staff consists of nine British licensed ground engineers, one Egyptian holding British Ground Engineers' licence, and five Egyptians holding Egyptian Ground Engineers' licences. Of the British engineers, six are ex-Royal Air Force. In addition, eight skilled and 60 semi-skilled Egyptians are employed on the engineering staff.

Egyptian fitters and riggers are picked men, carefully trained and well up to their work.

#### (f) *Service Station*

A full stock of light aeroplane spare parts is maintained and any light aeroplane repairs and overhauls can be undertaken on the spot.

#### (g) *Aerodromes and Landing Grounds*

A full list of all aerodromes and landing grounds in Egypt will be found in Appendix 5.

TABLE A.—PART 1  
Aircraft—External Routes

*British (Imperial Airways).* All aircraft employed on these routes and reserve aircraft are based on Egypt.

Type.	Numbers.	Based on	Route.	Capacity, Personnel.	Total Weight Capacity, including Freight.	Range in hours.	Cruising Speed (m.p.h.).	Petrol Consumption in Gallons per hour.
Scipio Flying Boat .. ..	1	Alexandria	Brindisi-Egypt	Crew, 4 Passengers, 15-18.	5,077 lb.	6.7	100	110
Hannibal (Eastern Class) ..	6	Heliopolis	Karachi-Egypt- Kisumu.	Crew, 4 Passengers, 24.	4,670 lb.	6.25	100	110
Avro "X" .. .. .	1	Heliopolis	Special Charter and Emergency Work.	Crew, 2 Passengers, 8	1,639 lb.	7	92	35
Calcutta Flying Boats ..	3	Alexandria	—	Crew, 4 Passengers, 6.	2,765 lb.	6	80	81
"C" Class Flying Boats ..	*2	†Alexandria	Brindisi-Egypt	Crew, 5 Passengers, 24.	50,000 lb.	6	160	125
D.H.86 .. .. .	5	Khartoum Penang	Khartoum/Lagos Penang/Hong Kong	Crew, 2 Passengers, 10.	10,000 lb.	5	130	40

\* Twenty-nine under construction ; 2 already delivered.

† Temporary schedule until new services are brought into operation in 1937.

TABLE A.—PART 2

## Aircraft—External Routes

*K.L.M. (Royal Dutch Air Lines).* Not based on Egypt.

Type.	Route.	Personnel.	Total Weight Capacity.	Cruising Speed (m.p.h.).	Range in hours.
Douglas D.C.2 .. .. .	Amsterdam—El Dekheila (Alexandria)—Gaza—Baghdad— Batavia.	Crew, 4 Passengers, 7.	Useful load, 5,720 lb. (less petrol and oil).	170	6.5

TABLE A.—PART 3

## Aircraft—External Routes

*Italian ("Ala Littoria").* Not based on Egypt.

Type.	Route. Numbers.	Route.	Personnel.	Total Weight Capacity, including Freight.	Range in Miles.	Range in Hours.	Petrol Consumption Gallons per hour.
Ca.133. 3-340-h.p. Stella VII engines.	6	Rome—Syracuse/Benghazi/ Cairo/Wadi Halfa/ Khartoum/Kassala/Asmara/ Addis Ababa.	Crew, 2 Passengers, 16.	14,080 lb.	840 approx.	No figure available.	No figure available.
S.73. 3 Wright Cyclone engines.	10	do.	Crew, 4 Passengers, 18.	No figures available for empty or loaded weights.	1,000 approx.	do.	do.

TABLE A.—PART 4  
Aircraft—Internal Routes

Misr Airwork S.A.E.

Type.	Numbers.	Based on	Route.	Capacity, Personnel.	Total Pay- load with Full Tanks.	Range in hours.	Cruising Speed (m.p.h.).	Petrol Consumption in Gallons per hour.
D.H.86 Express .. ..	3	Almaza	All routes of Company, except Valley Express and Upper Egypt.	Crew, 4* Passengers, 10-12.	1,700 lb.	4½	140	40
D.H.89 Dragon-Rapide ..	5	Almaza	All routes, except Baghdad and Cyprus.	Crew, 1 Passengers, 8.	1,133 lb.	3½	135	22
D.H.84 Dragon .. ..	1	Almaza	All routes, except Baghdad and Cyprus.	Crew, 1 Passengers, 8.	1,133 lb.	4	105	15
D.H.85 Leopard-Moth ..	1	Almaza	Special Charter	Crew, 1 Passengers, 2.	400 lb.	5½	115	7½
D.H.87 Hornet Moth ..	1	Almaza	Special Charter	Crew, 1 Passenger, 1.	475 lb.	4½	100	7½
D.H.60 Moth .. ..	4	Almaza Flying School.	School	Crew, 1 Passenger, 1.	400 lb.	4	85	5½

\* 2 pilots, 1 W/T operator, and 1 engineer.

## CHAPTER XVI

**RESOURCES****Crops.**

Extent of Cultivated Land, Nature of Crops, Basin and Perennial System of Irrigation, The Agricultural Seasons, Details of the Principal Crops and Common Grains and Forage Used in Egypt.

**Cattle.**

Cattle, Water Buffaloes, Sheep, Goats.

**Dairy Produce.**

Butter, Milk, Cheese, Poultry, Fish.

**Transport.**

Motor Transport, Draught Transport, Pack Transport, Riding Horses.

**Minerals.****Explosives.****Petrol, Fuel Oil, Lubricants.****Timber.****Fuel.****Industries.****Commerce.**

General Movement of Trade, Exports and Imports, Trade with the Sudan, Chambers of Commerce.

**Shipping.**

Shipping through Egyptian Ports, Particulars of Steamship Lines Based on Egypt.

**1. Crops. Extent of Cultivated Land, Nature of Crops, etc.****(a) General**

The cultivated territory of Egypt is confined to the Delta and Valley of the Nile and the Faiyum, a total area of nearly  $6\frac{1}{2}$  million acres. Thanks to a highly developed system of irrigation (*see* Chapter V, para. 4), the cultivated lands are of remarkable fertility and produce a variety of cereals, a type of clover known as "Berseem," cotton, sugar cane, fruits and vegetables of many kinds.

Actually the cereal crops are insufficient to meet the needs of the whole population, and a considerable quantity of wheat flour and cereals are imported. Local resources are, however, adequate to meet the demands of a large army as far as green fodder, fresh vegetables and fruit are concerned.

The *Basin System of Irrigation*, confined to certain districts of Upper Egypt, means the diversion of the Nile at flood time through short canals into stretches of land surrounded by high banks, by means of which the water is prevented from escaping, thoroughly permeates the underlying soil and leaves a deposit of fine Nile mud. Upon this muddy sediment the crops are sown in winter months and thrive for the most part without further watering until their harvest at the beginning of the summer, after which the land remains fallow until the next annual flood.

Where the *Perennial System of Irrigation* is in force, by means of barrages on the Nile itself, water is held up at a more constant level in order to supply, at regular intervals, a system of canals constructed throughout the greater part of the country, thus enabling the land to yield two or three crops a year.

About 4 million acres of land fall in this category.

Owing to the possibility of obtaining two or three crops a year and to a congested population within a limited area of cultivatable land, land values have risen considerably during recent years.

#### (b) *The Agricultural Seasons*

The agricultural seasons are known as :—

Summer ..	From 1st April to 1st August.
Flood ..	From 1st August to 1st December.
Winter ..	From 1st December to 1st April.

The summer season is that part of the year when the Nile is low. Crops can then only be grown where the land can be supplied with water raised from canals or from wells. In such areas, the crops are actually sown in March and gathered in September, and are mainly cotton, sugar cane, millet, rice, vegetables and melons. Basin crops are generally gathered at the beginning of the summer season, and the land lies idle till the flood comes, except where watered by wells.

The flood season is that part of the year when the Nile is high. About one-third of the land is put under cultivation, crops are sown about July and gathered in September. The basin areas are then covered with flood water.

The winter season is marked by the falling Nile. Nearly all the land is cultivated, the crops being sown in October or November and gathered in May or June.

*Note.*—A table showing the times of sowing and reaping the main crops will be found at the end of this chapter.

(c) *Details of the Principal Crops, Common Grains and Forage used in Egypt*

*Cereals* are grown nearly equally in Upper and Lower Egypt. About 1,300,000 acres are planted with wheat and 350,000 acres with barley, but little is exported. Egyptian barley is of good average quality, but inclined to be fouled with dirt and stones. Like other grains, it is subject to attack by weevil.

*Maize*, locally known as "Dhourra," is one of the staple foods of the fellaheen and is chiefly grown in Lower Egypt. About 1,700,000 acres are sown with it every year. Plentiful supplies of the large flat white variety are available. The quality is excellent, but unlike the imported red maize, it ferments and turns sour if stored longer than three months.

*Millet* is the corresponding crop in Upper Egypt.

*Green Dhourra* ("Dhourra Shami") is useful as a green feed in the summer when berseem is not available. Its feeding value does not compare with berseem.

*Rice*.—Two kinds of rice are grown: the summer rice, sown in May, and the flood rice, sown in August. The former is largely exported and the latter is one of the chief foods of the fellaheen. Rice straw is useful as bedding.

*Tibbin*, the local name for the residual straw of wheat and barley, broken and crushed after threshing, is very plentiful. Properly screened, it is the main bulk ration (fodder). Cut finely and mixed with treacle, it is largely sold as "Sucepaille." The best wheat tibbin comes from Upper Egypt (Minya).

*Berseem*, the local variety of clover, is a winter crop, and, as there are no grass fields for grazing, it is the chief green food for animals. It is available from December to May. All animals thrive on berseem, but not more than 20 lb. a day should be given when in hard work.

"Dries" is the term applied to the dried varieties of berseem "Gigawi," "Misgawi" and "Hagayi," and is made in the early summer. It is of high feeding value and consequently expensive.

*Cotton*.—In normal years cotton occupies about 32 per cent. of the cultivated area of Egypt, producing an annual crop of some  $7\frac{1}{2}$  million qantars. Three-quarters of the cotton area lies in Lower Egypt. Egyptian cotton has the advantage of giving a large yield, combined with a fibre of exceptional quality. Several different kinds of cotton have been evolved, and cotton and cotton-seed take pride of place amongst exported crops.

*Sugar Cane.*—The sugar plantations cover an area of about 60,000 acres, and are situated mainly in Upper Egypt in the Giza, Beni Suef, Minya, Asyut, Girga and Qena Provinces. The entire sugar industry is monopolized by the Société Générale de Sucreries et Raffineries d'Égypte and has an annual output of 10,000 tons of sugar and 50,000 tons of molasses.

There is always a large stock of sugar in the country, the cane being planted in March and ready for cutting about the end of January. The raw cane is also consumed by both fellaheen and their beasts.

*Vegetables* are grown in both summer and winter. Over 650,000 acres are generally sown with beans and lentils, mostly in the Qena and Aswan Provinces. The crop is a winter one. Other vegetables cultivated are onions (a considerable quantity is exported), leeks, tomatoes, aubergine, okra, Jews' mallow, cabbage, cauliflower, spinach, marrows, cucumbers and potatoes.

*Fruits.*—The date palm flourishes, especially in the Sharqiya, Beheira, Giza, Faiyum and Aswan Provinces. It is also grown in the oases of the Western Desert. The fruit ripens in September and is much appreciated by the natives. There are over seven million date trees in the country.

Other common fruits are oranges, limes, bananas, grapes, mangoes, apricots, melons, figs and peaches. Throughout the year there is always some fruit plentiful enough to be bought by the poorest natives.

There is a prospect in the future of an expansion of the export trade in both fruit and vegetables.

## 2. Cattle, etc.

Egypt cannot be ranked as a cattle-producing country. The total number of head in the country is roughly 950,000. They are bred chiefly in the Delta. The meat supply does not cover the demand and imports are made from the Sudan and Australia.

*Water Buffaloes* number over 900,000, are bred everywhere and are used for meat by the fellaheen.

*Sheep* are numerous (about  $1\frac{1}{2}$  million), but again not sufficient for the country's demand for meat. There are about one million in Egypt. The wool is of inferior quality.

*Goats* exist in large numbers in the Delta and Nile Valley and in the inhabited portions of the desert. They are mainly kept for milking.

### 3. Dairy Produce

#### (a) *Butter*

Native butter—not unlike ghee—is plentiful, but unpalatable. Europeans rely on the Australian imported butter.

#### (b) *Milk*

Goat, buffalo and cow milk is plentiful. British troops are always supplied with tinned milk shipped from England. Should it be necessary to make a local contract, great care would have to be taken in selection, as most local dairies are extraordinarily dirty.

#### (c) *Cheese*

The local cheese is an acquired taste. It would be more satisfactory to import from abroad.

#### (d) *Poultry Farming*

Fowls, turkeys and geese are plentiful. Pigeons are bred for eating in every village. The local chicken is extremely small and tough.

Eggs are about the size of English pullets' eggs. There are more than sufficient for the requirements of the population and the egg trade occupies an important position in the export trade of Egypt. The export season begins late in December and ends late in February. England is the biggest consumer of Egyptian eggs. Special restrictions are imposed upon the export trade for the purpose of fostering and protecting poultry farming.

Egypt exported during 1932, 203,800,000 eggs of a value of £E.518,300, and during 1934, 115,400,000 of a value of £E.226,911, showing a surprising variation of supply and demand.

#### (e) *Fish*

The fish market of Cairo is supplied mainly from Alexandria and the Birket Qarun (Faiyum). From Alexandria comes most of the fish, sole, bass, loup-de-mer, mullet, whiting, etc., eaten by Europeans. The fish of the Birket Qarun, Nile, Lakes Manzala, Burullus and Idku, and the Canals, are of poor flavour but much eaten by the natives.

#### 4. Transport

##### (a) *Motor Transport*

It is estimated that there were in 1936 approximately 1,800 buses and 5,200 lorries in the whole of Egypt.

Detailed statistics of the buses and lorries available in Cairo, Alexandria and Port Said, and general figures in the case of some other large towns are given in Chapter II, Political Geography, 5, Principal Towns.

A list of serviceable police vehicles is included in Chapter XVIII, Section B, Police. In addition, it may be noted that the Egyptian State Railways own 50 buses and four lorries, the greater number of which can be taken as being in good running order.

The remainder are of no value from a military point of view for the following reasons. Although the important towns of the Delta and Nile Valley as far south as Asyut are linked by motor bus and carrier services, the bulk of the motor transport in question is old, ramshackle and quite unreliable. It would not be practicable to collect and select the few reliable vehicles available.

Even the statistics given of the motor transport available in Cairo, Alexandria, etc., are apt to be misleading. The motor transport trade in Egypt receives little encouragement from the authorities, probably owing to the vested interests of the Egyptian State Railways, and instead of progressing, appears to be, if anything, deteriorating. Vehicles have but a short life owing to overloading, the bad state of the roads and indifferent driving and maintenance. Spare parts are costly owing to import duty.

At the cost of disorganizing local traffic, a number of buses suitable as troop-carrying vehicles on the Delta roads could be obtained in Cairo and Alexandria. Out of the lorries estimated as reliable in the statistics of Cairo, Alexandria and Port Said, it is considered that after overhaul and provided that military drivers were forthcoming, a large proportion could be made available for L. of C. work on Egyptian roads. It would be virtually impossible, however, to find lorries suitable for desert work. In fact, the hiring of civilian vehicles for a mere three or four days' peace-time manœuvre has proved an unqualified failure and waste of public money. During the manœuvres of 1933, hardly a single hired vehicle was capable of performing the journey from Cairo to Wadi Natrun over one of the better desert tracks.

A lack of zeal by the native driver when faced by uncomfortable conditions is another factor which must be taken into account.

*(b) Draught Transport*

There are unlimited 2-wheeled and 4-wheeled carts available for hire, their normal load being 12 cwt. and 18 cwt. respectively. Such carts may be hired in Cairo through the Traffic Department of the Cairo City Police, and in other towns through various agencies, though application should be made to the local police authorities in the first instance. Normal rate of hire is Pt. 25 per day (6.00 a.m. to 6.00 p.m.).

Daily forage ration of animals is—

*Light Draught Horses.*—Grain 7 lb., dries 4 lb., tibbin 8 lb., green forage 15 lb., rice straw 4 lb., salt 1 oz.

*Light Draught Mules.*—Grain 8 lb., tibbin 8 lb., green forage 10 lb., rice straw 4 lb., salt 1 oz.

This type of local transport will work outside its own district.

*(c) Pack Transport*

There are unlimited numbers of camels and donkeys available for hire. Camels for transport purposes are bred in Upper Egypt and are also imported from Arabia, Palestine, Syria and Libya. (Riding camels are imported from the Sudan.) Donkeys, the chief domestic animal of Egypt, can be obtained in every town and village.

The normal loads are 4 cwt. for a camel and  $1\frac{1}{2}$  cwt. for a donkey. Hire in Cairo can be effected through the Traffic Department, Cairo City Police, and in other towns enquiry should be made of the local police authorities in the first instance.

While the normal rates of hire are Pt. 12 per day per camel and Pt. 15 per day per donkey, contract rates can be obtained for large numbers over a considerable period, as is done in Egypt during training and manœuvres.

The daily forage ration for animals is :—

*Camels.*—20 lb. dries.

*Donkeys.*—2 lb. dries, 6 lb. tibbin, 4 lb. crushed barley.

It should be noted that the Delta baggage camel is incapable of going for long periods without water until he is gradually trained to the experience, as he is normally accustomed to adequate supplies of water and green forage.

Animals can be hired to work outside their own districts.

(d) *Riding Horses*

Horses are not common in Egypt and consist almost entirely of Arabs, though thoroughbred and Argentine stallions and mares have been imported in recent years. The richer cultivators generally own a horse and there are hundreds of horses in the racing and polo stables of Cairo (Helmieh and Heliopolis districts). Generally speaking, Egypt cannot be regarded as a source for remounts.

## 5. Minerals

Egypt yields neither coal nor iron. It is, therefore, cheaper as a rule to import articles than to make them locally.

The following metals and minerals are mined in Egypt :—

*Phosphates* are obtainable at various localities in the Eastern Desert and the oases of the Western Desert. Owing to the lack of transport facilities, mining operations are restricted to areas lying in the vicinity of Safaga and Qosseir on the Red Sea coast and at Siba'iya in the Nile valley near Isna.

Phosphate is exported for the manufacture of super-phosphate, which is used as a fertilizer, but some of its products are finely ground and used locally as a manure. The Egyptian Phosphate Company have works at Safaga. There is an Italian Company at Qosseir, and the Societe Platriere de Ballah produces manure from the phosphate of Siba'iya for local consumption.

The annual production of phosphate rock is approximately 400,000 metric tons.

*Manganiferous Iron Ores* are found in large quantities in Sinai near Abu Zeneima. The mines are temporarily closed owing to the general economic depression.

*Nitrate Shale* is collected between Qena and Idfu in Upper Egypt and utilized locally in its natural state as a fertilizer. Approximate annual production, 8,000 metric tons.

*Crude Carbonate and Sulphate of Soda* are recovered from the salt pans of the Beheira lakes. At Wadi Natrun, where large soda lakes exist, there is a factory for the production of caustic soda owned by the Egyptian Salt and Soda Company. Approximate annual production 800 metric tons.

*Quarrying*.—Building stone is readily procurable, the chief quarries being found near Cairo, in the valley of the Nile, south of Cairo, in the vicinity of the Suez Canal and at Mex, near Alexandria ; these places being within easy reach of transport facilities.

*Granite* is quarried at Aswan. It is harder than the European varieties and cheaper, costing from L.E.5-8 per ton against L.E.10 for European granites. The Aswan Dam and Nag'Hammadi Barrage were almost wholly built of the local granite.

Heavy transport expenses militate against the use of this granite other than locally.

*Limestone*, quarried in large quantities along the Nile valley from Aswan to Cairo, at Mex (Alexandria) and in the vicinity of Suez, is used as building stone and to make cement. The stone for the Port Said jetty and breakwater and for the new Suez harbour works, was obtained from the Gebel Attaqa Quarries, near Suez.

To the limestone and clay of Ma'asara (near Cairo) is due the cement industry established in that locality. The industry has also been further developed at Tura and Helwan, where new factories have been built.

*Basalt* is produced at Abu Zabal for paving stones, road metal and railway ballast.

*Sandstone and Quartzite* at Gebel Ahmar, Abbasia (Cairo), and in the Mudirya of Aswan, is used for building and road metal.

*Gypsum* is collected from the top of the limestone plateau on either side of the Nile valley near Cairo for the manufacture of the cheaper varieties of plaster. A specially pure variety is found south of Lake Manzala, near the station of Ballah, from which the best qualities of plaster of paris are made.

*Red Bricks and Tiles* are made from the clay of El Wadi, south of Helwan, while Aswan clay, the only refractory clay found in Egypt, is utilized for the manufacture of firebricks and glazed pipes. A special quality clay, found at Qena, is employed on a large scale for the production of porous native pottery for water cooling.

*Sand Flint Gravels* are collected from several localities along the edge of the Nile valley and are extensively used in concrete buildings. The islands which appear in the bed of the river after flood are also exploited for sand.

## 6. Explosives

Egypt manufactures no explosives and the quantities imported are relatively small, mainly detonators for quarrying, black powder, and ammunition for the British and Egyptian Armies.

Importation of non-military explosives is the monopoly by concession of two firms—

Thomas Cook and Son. Explosives. As agents to Nobels' explosives.

Egyptian Salt and Soda Company. Powder.

The magazine of Thos. Cook and Son is at Ataka, 10 miles south of Suez and  $2\frac{1}{4}$  miles south of the Suez Canal Company's quarries, and about 200 yards from the sea shore. No sales are made without Egyptian Government authority. Further details will be found in Chapter IV—Principal Towns—Suez.

The following figures of stocks on hand in August, 1936, give some guide as to the average amount of explosives available :—

Monobel powder	..	..	370 cases.
Gelignite 62 per cent. N.G.	..	..	2,380 cases.
Detonators, No. 7	..	..	280,000
Detonators, No. 6	..	..	136,000
Elect Detonators 73 in. Subm.			5,650
Elect Detonators 96 in. Subm.			670
Black fuse	..	..	37,000 coils.
White fuse	..	..	2,500 coils.

The main store of the Salt and Soda Company is at Wardia Mex, Alexandria. There are small stores in every province.

## 7. Petrol, Fuel, Oil, Lubricants

### (a) *Crude Oil Sources*

Crude oil is obtained in large quantities from the Anglo-Egyptian Oilfields Company's wells at Hurghada on the Red Sea coast, and in smaller quantities from wells in the neighbourhood of Gebel Abu Durba in Sinai on the Gulf of Suez. Thence it is shipped by oil tankers to Suez for treatment at the refineries of the Anglo-Egyptian Oilfields and Shell Company or the Egyptian Government Petroleum Refinery. In addition, the Refinery imports and treats crude oil from overseas.

The products of the Hurghada Oilfields are falling off gradually, and there are no other sources of production of any kind in Egypt.

From 1928-32 the crude petroleum produced at Hurghada varied between 260,000 to 280,000 tons. In 1933 and 1934 production fell off to 229,000 and 211,000 tons, respectively. These are the latest available full figures.

(b) *Refineries, Products, Storage Capacity, etc.*

At the Anglo-Egyptian Oilfields and Government Refineries at Suez, the only refineries in Egypt (for brief description see Chapter IV, Section 5—Principal Towns, Suez), there are installations for pumping from tank vessels to the works.

The Anglo-Egyptian Oilfields Refinery at Suez in 1933 treated 220,000 tons of Egyptian crude and 87,000 tons of imported crude, and in 1934, 214,000 tons of Egyptian Crude and 87,000 tons of imported.

Products included approximately :—

	1933.	1934.
	Tons.	Tons.
Benzine .. ..	85,000	75,000
Kerosene .. ..	15,700	25,500
Gas and Fuel Oil ..	146,500	120,500
Ashphalt and Coke ..	52,000	60,000

The Government Petrol Refinery at Suez received in 1933 as a Royalty 8,400 tons of Hurghada crude, and in 1934, 12,800 tons. Altogether this refinery handled in 1933, 18,400 tons, and in 1934, 22,900 tons and produced approximately the following, the bulk of which was distributed to various Government Departments.

	1933.	1934.
	Tons.	Tons.
Benzine .. ..	2,650	4,250
Kerosene .. ..	1,850	2,000
Gas and fuel oil ..	13,700	16,000

The full figures for 1935 are not available, but it is interesting to note that in the year the Government Refineries went into Asphalt production for the first time, and up to August they had produced 2,650 tons.

At the Anglo-Egyptian oilfields and Egyptian Government refineries there is storage capacity, mainly bulk, in tanks for the following. In each case the average quantity held in stock is also stated.

*Shell and Anglo-Egyptian Oilfields*

	Storage Capacity.		Stock normally held.
	Bulk.	Packed.	
	Tons.	Tons.	Tons.
*Benzine ..	38,500	750	17,800
Kerosene ..	10,000	750	6,700
Fuel oils ..	98,800	500	43,500
Lubricating oils	400	—	260

\* Of which about 10,000 tons for aviation spirit.

*Egyptian Government Refineries*

			<i>Bulk.</i> Tons.	Tons.
Benzine	..	..	600	600
Kerosene	..	..	11,300	420
Fuel oils	..	..	16,300	3,700

Shell and other companies' bulk and packed storage capacities at other ports are—

*Alexandria  
Shell Co.*

	<i>Bulk.</i> Tons.	<i>Packed.</i> Tons.	
Benzine	.. 2,500	750	(In tins of 4 Imp. Gals.)
Kerosene	.. 18,000	750	
Fuel oils	.. 20,800	—	
Lubricating oils	12,000	—	

*Socony Vacuum Co.*

Benzine	.. 6,125	530
Kerosene	.. 17,450	885
Fuel oils	.. 14,650	—
Lubricating oils	1,700	60

*Other Companies*

Benzine	.. 7,700	2,000
Kerosene	.. 39,000	1,900
Fuel oils	.. 13,500	—
Lubricating oils	—	130

Average stocks of Shell and other companies during the first half of 1935 for the whole country were :—

	Benzine.	Kerosene.	Fuel Oils.	Lubricating Oils.
Shell Company ..	21,110	30,420	86,250	8,000
Other companies	9,150	23,050	16,300	4,000
Totals ..	30,260	53,470	102,550	12,000

The following is a list of places where benzine is stored in fairly large quantities. Exact stocks held can be readily ascertained through the principal supplying companies. At those marked with a \* there is a bulk storage in tanks. At those marked with a @ there is an aerodrome or landing ground :—

Abu Hammad.	Kom Hamada.
Abu Kebir.	Luxor. @
Alexandria.* @	Maghaga.
Ashmoun.	Manfalut.
Asyut.* @	Mansoura.*
Aswan. @	Mattai.
Ayat.	Mehalla Kubra.*
Badrashein.	Mellawi.
Baliana.	Mengala.
Bassioun.	Menouf.*
Belcas.*	Minet el Ghamr.
Benha.	Minia.*
Beni Suef.*	Mit Ghamr.
Biba.	Nag. Hamadi.
Bielah.	Nazali Gaboub.
Bilbeis. @	Port Said.* @
Birket el Sab.	Qaliub.
Burg el Nur.	Quesna.
Cairo.* @	Roda.
Damanhour.*	Samalut. @
Damietta.*	Samanud.
Dairut.*	Sennoures.*
Desuq.*	Shebin el Kom.*
Diarb Nigm.	Shebin el Quanitir.
Dikernes.	Sherbin.
Faqus.	Shoubrakheit.
Faiyum.*	Simbellawein.
Girga.	Sohag.
Hehia.	Suez.* @
Ismailia.* @	Tahta.
Kafr el Dawar.	Tala.
Kafr el Saki.	Talka.
Kafr el Sheikh.*	Tanta.*
Kafr el Zayat.*	Wasta.*
Kena.	Zagazig.*
Kerkas.	Zifta.

*(c) Export, Import, Local Consumption*

The following are the exports of Egyptian petroleum products of 1933 and 1934 :—

	1933.	1934.
	Tons.	Tons.
Benzine .. ..	53,000	46,500
Kerosene .. ..	2,300	2,300
Gas fuel oils ..	7,600	5,000
Lub. oils .. ..	1,130	1,220
Asphalt .. ..	40,000	45,000

In addition to the imported crude oil handled by Egyptian Refineries referred to in sub-para. (b) above during 1933 and 1934, the following oil products were imported from various foreign oilfields :—

	1933.	1934.
	Tons.	Tons.
Benzine .. ..	13,600	8,300
Kerosene .. ..	273,000	268,000
Gas, fuel oils ..	174,000	243,000
Lub. oils .. ..	22,700	22,500
<i>Port Said Shell Co.</i>	<i>Bulk.</i>	<i>Packed.</i>
Benzine .. ..	—	50
Kerosene .. ..	—	50
Fuel oils .. ..	39,600	—
<i>A.I.C.C.</i>		
Fuel oils .. ..	30,000	—
<i>Socony Vacuum Co.</i>		
Benzine .. ..	—	140
Kerosene .. ..	125	16,000
Fuel oils .. ..	28,000	—
Lub. oils .. ..	—	650
<i>Other Companies</i>		
Benzine .. ..	45	45
Kerosene .. ..	250	190
Fuel oils .. ..	26,000	—
<i>Cairo</i>		
<i>Shell Co.</i> .. ..	850	200
Kerosene .. ..	1,100	200
Fuel oils .. ..	800	—
Lub. oils .. ..	—	300
<i>Socony Vacuum Co.</i>		
Benzine .. ..	1,000	245
Kerosene .. ..	1,000	200
Fuel oils .. ..	235	—
Lub. oils .. ..	—	340

<i>Cairo—contd.</i>		1933.	1934.
		Tons.	Tons.
<i>Other Companies</i>		<i>Bulk.</i>	<i>Packed.</i>
Benzine	.. ..	1,600	250
Kerosene	.. ..	3,050	340
Fuel oils	.. ..	130	—
<i>Up Country</i>			
<i>Shell Co.</i>			
Benzine	.. ..	900	900
Kerosene	.. ..	7,750	1,300
Fuel oils	.. ..	8,000	—
Lub. oils	.. ..	—	2,400
<i>Socony Vacuum Co.</i>			
Benzine	.. ..	—	670
Kerosene	.. ..	4,000	860
Fuel oils	.. ..	1,400	—
Lub. oils	.. ..	—	1,600
<i>Others (estimated)</i>			
Benzine	.. ..	900	1,600
Kerosene	.. ..	11,700	2,200
Fuel oils	.. ..	9,500	—
Lub. oils	.. ..	—	4,000

Local consumption of all petroleum products for 1933 and 1934, whether from native or foreign crude or imported refined, are estimated at :—

		1933.	1934.
		Tons.	Tons.
Benzine	.. ..	57,500	62,500
Kerosene	.. ..	287,000	295,000
Gas, fuel oils	.. ..	206,000	198,000
Lub. oils	.. ..	16,500	18,000

(d) *Pipeline and Pumping Plant*

At Alexandria, Port Said and Suez, both white and black oils also certain lub. oils, are discharged into store tanks by means of the tankers' pumps through suitable pipelines.

Shore steam is supplied to tankers discharging benzine at Alexandria and Suez as a safety precaution.

There are pumping plants at all three installations for delivering bunkers to vessels or to bunkering barges.

At Alexandria the average rate of discharging tankers is 150 tons per hour ; at Port Said 300 tons per hour ; and at Suez 200 tons per hour. Bunkering and/or loading rate at Alexandria and Suez are much the same as the discharging rates, but at Port Said bunkers can be delivered under favourable circumstances at the rate of 600 tons per hour.

(e) *Normal Method of Distribution ; Nature of Containers in use ; Pump Supply*

*Motor Spirit.*—In principal towns by bulk tank-wagon from principal bulk storage installations, discharged into tanks. Tank lorries filled therefrom fill kerbside pumps and service stations.

For villages and also part of main town trade, where consumers have no bulk facilities or prefer to have tinned benzine, 4-gallon tins are made and filled at Ocean installations, and railed therefrom to various depôts where special tinned stores are provided. These are distributed to shops, clients, etc., by carts. A certain amount of tinned benzine is despatched by road as this is found cheaper than railway.

*Motor Spirit Containers.*—A certain number of 42- or 65-gallon drums for benzine are available, but are rarely used in Egypt, except by the Egyptian Government Refinery which uses this method to send supplies to various Government Departments.

4-gallon drums are used for supplying a limited number of private consumers.

4-gallon tins are the general method of distribution in the villages. A certain number of 2-gallon cans are available, but owing to the amount of adulteration that occurred, have now been withdrawn.

*Pumps.*—In general use in main towns and a few of the larger up-country villages, Tanta, Asyut, etc.

*Aviation Spirit.*—Aviation spirit is usually imported from Borneo at Suez, and discharged from tankers into bulk installation tanks.

Rail tank wagons are filled therefrom and these convey the spirit to the main towns where Shell Co. have Branch Offices or Agents, *e.g.*, Asyut, Luxor, Aswan, Alexandria and Cairo.

From these centres the benzine is re-distributed to the various aerodromes under their control and is handled by Shell personnel exclusively up to the time it is delivered into the aircraft tanks.

In the case of R.A.F., Aviation spirit is delivered in bulk at their permanent occupied aerodromes and they refuel their aircraft themselves.

For conveyance from Suez to aerodromes of packed aviation spirit, three types of containers are used, *i.e.*, 4-gallon tins, 44-46-gallon drums and 65-gallon drums.

At aerodromes which are on main routes aviation spirit is decanted into portable supply units from which it is pumped into the aircraft tanks. At aerodromes where there is a very great demand, underground tanks are installed which hold petrol in bulk for supplying these portable units.

The main aerodromes in Egypt are :—

Aboukir (Inland).  
 Aboukir (Coastal).  
 Abu Sueir.  
 Heliopolis (Town).  
 Heliopolis (Desert).  
 Helwan.  
 Ismailia.

*Fuel Oil* is distributed in bulk tank-waggon from Ocean Installations to all centres and the majority of villages. It is then discharged into tanks or in some cases direct into drums. Distribution from these centres is made either by tank-carts or drums filled from storage tanks and loaded on carts.

In rare instances drums are filled at Ocean Installations and despatched by rail. As, however, the drum freight exceeds tank-waggon freight by about one-third, this is rarely done.

*Lubricants*.—A large part of the imported lubricants is discharged from the tankers into tanks at the main installations, then blended and packed into 42-gallon drums or 4-gallon tins. A certain amount of lubricants is received from abroad in drums.

No inland despatches of lubricants in bulk are made with the exception of the Egyptian State Railways, who take their axle and engine oils in tank-waggon from Alexandria and discharge into their own drums at their various stations.

Motor oils are filled from drums into litre, and 1-gallon containers, as well as the 4-gallon tin, which is the smallest type container for industrial oils.

Distribution to clients, shops, etc., is made generally by mule carts.

## 8. Timber

With the exception of many varieties of date palm there are few trees in Egypt. All wood has to be imported, the north-west Mediterranean and Black Sea coast being the chief source of supply.

## 9. Fuel

The resources of Egypt are meagre. Egypt yields no coal and little wood. For cooking purposes and warmth the fellaheen use "gilla" a cake of dung, mud and chopped straw. In the towns fuel oil and coke is used by the poorer classes.

For manufacturing and other purposes, coal, anthracite, coke and other patent fuels are imported, the bulk of the coke being absorbed by various gas companies and by the Cairo and Alexandria tramways. Local or imported fuel oils of various kinds are also used, and Diesel engines are replacing steam-engines in many parts of the country, though recent advances in oil prices may tend to retard this change for the present. In many of the up-country ginning factories where it is essential to keep down overhead charges, cotton and maize sticks are burnt in lieu of coal.

The following are some statistics of fuel imports :—

	<i>Metric Tons.</i>		
	1932.	1933.	1934.
Coal and Anthracite	1,033,000	1,083,000	1,243,000
Coke .. ..	12,000	21,000	16,000
Briquettes .. ..	41,000	27,000	46,000

## 10. Industries

At the outbreak of the War of 1914–18, it became impossible to import many foreign manufactured articles and the country turned its attention to the revival of its surviving industries. The Bank Misr provided a large amount of the capital and now holds a controlling interest in most of the country's industrial projects.

*Spinning and Weaving.*—There are three large mechanical plants in Egypt :

(a) *Alexandria.*—The Filature Nationale d'Egypte ; 64,000 spindles and 1,500 looms.

(b) *Mehalla Kubra.*—The Societé Misr. pour le Filage et Tissage de Coton ; 150,000 spindles and 4,000 looms.

As an example of progress, it should be pointed out that the Societé Misr's production figures have risen as follows :—

	1931.	1934.
Yarns, lb. .. ..	1,700,000	12,700,000
Textiles, yards ..	4,800,000	25,100,000
Textiles, pieces ..	148,000	880,000

(c) *The Barrage.*—Prisons Department ; 2,000 looms.

Other factories for the spinning and weaving of plain, fancy and striped silks also exist.

*Dyeing.*—A trade allied to the weaving industry, is carried on almost entirely in the villages.

*Rug Making.*—An expanding industry with centres at Cairo, Minya, Asyut and Nag 'Hammadi.

*Soap.*—A certain amount of the household variety is manufactured from cotton seed oil and caustic soda.

*Tanning and Leather Goods.*—There is an export trade of untanned hides and skins, but a large quantity is tanned locally. The main centres are Cairo and Alexandria.

The tanning industry in Egypt is handicapped by traditional and unscientific methods of flaying and the Government are taking steps to reorganize the industry. The local production of footwear is increasing and all footwear for Egyptian Government uniformed services is made in the country.

Most of the tanning materials are imported from abroad.

*Sugar Industry.*—(See para. 1 of this Chapter.)

*Building Material, Bricks, Pottery, etc.*—Building material is abundant in Egypt; nevertheless, the fellaheen still use mud bricks for their buildings. Until lately, there were no brick-making factories employing machinery. Now there are some at Cairo, Alexandria and Kafr Ammar (Giza). The largest of these is that of M.S. Sornaga at El Wadi (Kafr Ammar). It produces bricks of all types, roofing tiles, stoneware pipes, sanitary appliances, gypsum and cement. The daily output is 25,000 bricks, 10,000 tiles, 400 pipes. It employs 1,000 hands. There is a large demand for the products of the factory, which have in some cases replaced those imported from abroad.

*Cement Manufacture.*—There is a big demand for cement. In 1934, 85,000 metric tons were imported, as against 203,000 in 1932; 297,000 tons were manufactured locally in 1934, as against 289,000 in 1932 and the two modern factories at Tura and Helwan can increase their output if necessary. The local cement compares favourably with Portland cement, and the present policy is to develop the local resources.

*Furniture.*—Local workshops have improved the quality and quantity of their output, and furniture, which compares favourably with that made in Europe, is made locally.

*Oil Pressing.*—There are two factories at Alexandria and one at Tanta, and mills throughout the country. Cotton seed cakes, made from the residue after pressing, are exported to Europe for cattle feeding.

*Alcohol.*—There is only one factory for producing alcohol, which is made from molasses and the waste products of the sugar refineries. The factory is at Ma'assara, on the outskirts of Cairo. Its annual output is sufficient to meet home consumption. It pays to the Government an annual Excise Duty of about £E.250,000.

There are also smaller distilleries for liquor making.

*Paper Making.*—There is one paper mill at Alexandria for making wrapping paper and cardboard. The annual output is 3,000 tons. 500 hands are employed, of whom 450 are Egyptians.

*Printing.*—Printing has improved greatly. There are a large number of privately owned printing presses, the most important of which are the Imprimerie Misr, El Hilal and El Lataif, all of which are equipped with the latest types of machinery. The Government owns several presses, the most important of which, at Boulaq (Cairo), one of the largest in the country, is equipped with up-to-date machinery and employs about 1,000 hands. Arabic type, as well as the necessary types for printing in several foreign languages, is maintained.

Some of the dies are cast in Egypt, but the bulk is imported from England, France and Germany.

*Rice Milling.*—This industry is undertaken by many mills at Alexandria, Damietta, Rosetta and Mansura. Alexandria is the principal centre in Egypt of mills properly equipped with up-to-date machinery capable of milling rice acceptable on European markets, but two mills equipped with plants of the latest types have recently been established at Dikernis and Rod el Farag (Cairo). Amongst the principal rice mills at Alexandria are those belonging to Behring Co., Ltd., and Bomonti Co. The rice milled at other centres is partly exported to the Eastern markets, particularly those of Palestine and Turkey, and the remainder consumed locally.

## 11. Commerce

## General Movement of Trade

The following table shows the general movement of trade in 1933, 1934 and 1935 as compared with 1913 :—

<i>Year.</i>	<i>Imports.</i> £E.	<i>Exports.</i> £E.
1913 .. ..	27,865,000	31,662,000
1933 .. ..	26,767,000	28,848,000
1934 .. ..	29,297,000	31,056,000
1935 .. ..	32,233,000	35,604,000

## Movement of Trade with various Countries

	Imports.		Exports.	
	1933.	1934.	1933.	1934.
	£E.	£E.	£E.	£E.
England ..	6,188,000	6,486,000	12,001,000	9,938,000
British India and Aden.	760,000	780,000	462,858	1,180,124
Australia and New Zealand.	50,398	160,150	8,627	12,163
Other British Colonies.	555,000	537,000	277,000	502,000
France ..	1,898,000	1,626,000	3,512,000	3,007,000
Italy ..	2,092,000	2,039,000	2,126,000	2,529,000
Germany ..	2,032,000	2,147,000	2,290,000	2,830,000
Japan ..	2,873,000	3,444,000	1,410,000	2,752,000
U.S.A. ..	857,000	1,186,000	1,260,000	1,202,000
Belgium ..	1,306,000	1,671,000	229,000	315,000
Roumania ..	1,009,000	990,000	193,000	143,000
Chile ..	609,000	821,000	—	3,500
Turkey ..	385,000	413,000	48,000	65,000
Greece ..	671,000	640,000	267,000	245,000
Czechoslovakia	408,000	392,000	489,000	729,000
Russia ..	554,000	616,000	—	—
Switzerland ..	329,000	333,000	659,000	1,045,000
Holland ..	376,000	451,000	302,000	292,000
Syria ..	115,000	120,000	309,000	204,000
Austria ..	239,000	287,000	146,000	223,000
Norway ..	727,000	780,000	—	—
Palestine ..	149,000	141,000	444,000	420,000
Bulgaria ..	114,000	144,000	—	—
China ..	158,000	143,000	153,000	404,000
Sweden ..	228,000	329,000	99,000	171,000
Brazil ..	200,000	155,000	—	—
Spain ..	70,000	76,000	1,021,000	1,280,000
Poland ..	58,000	111,000	385,000	573,000

**Quantity and Value of Principal Articles exported from  
Egypt during 1934**

		Quantity.	Value. £F.
Cotton .. .. .	Kantara	8,564,000	24,787,900
Cotton seeds .. ..	Ardebs	3,198,400	1,465,000
Onions .. .. .	Tons	121,000	605,200
Other fresh vegetables .. ..	"	3,100	22,500
Rice .. .. .	"	68,400	589,000
Eggs .. .. .	Thousands	115,400	226,900
Cotton seed oil .. ..	Tons	3,300	108,600
Cotton seed cake .. ..	"	164,900	743,300
Raw wool .. .. .	"	1,090	71,100
Raw hides and skins .. ..	"	2,350	225,700
Cigarettes .. .. .	"	264	202,500
Benzine .. .. .	"	28,400	121,900
Phosphates .. .. .	"	469,500	404,100

**Value of Principal Articles imported into Egypt during 1934**

Article.	Value in £F.
Cotton and cotton textiles .. .. .	4,098,000
Mineral fuel and mineral oils .. .. .	2,964,000
Fertilizers .. .. .	2,171,000
Iron, cast, and steel .. .. .	1,946,000
Woods and articles made of wood .. .. .	1,403,000
Silk and silk textiles .. .. .	1,232,500
Machinery and wool textiles .. .. .	1,078,000
Colonial products .. .. .	958,000
Sacks, clothes and linen .. .. .	861,000
Electrical machinery and parts .. .. .	680,000
Automobiles and cycles .. .. .	667,500
Tobacco, cigarettes and cigars .. .. .	656,000
Chemicals and Pharmaceutical products .. .. .	638,000
Paper and its applications .. .. .	553,000
Greases, oil waxes and fatty substances .. .. .	515,000

The following are statistics of the type of goods imported from various foreign countries in 1934 and the percentage relative to total imports :—

*United Kingdom and  
British Possessions* } 27·2 per cent.

From U.K. .. Cotton textiles, coal, iron and iron manufactures, machinery, woollen textiles, whiskey, cigarettes, and cement, electrical apparatus.

Australia and New Zealand. Flour, wheat and butter, beef and veal.

India .. .. Empty sacks, rice and tea.

*France* .. .. 5·6 per cent. Silk, woollen and cotton textiles, iron and iron manufactures, brandy, wheat flour, ready made clothes.

*Italy* .. .. 7·00 per cent. Cotton and silk textiles, silk and cotton yarn, woollen textiles, motor cars, artificial silk yarn.

*Germany* .. .. 7·3 per cent. Iron and iron manufactures, machinery, calcium nitrate, beer, coal, fertilizers, ready made clothes.

*U.S.A.* .. .. 4·1 per cent. Motor cars, flour, machinery, iron and steel lubricating oils.

*Belgium* .. .. 5·7 per cent. Iron and iron manufactures, cotton textiles and yarn, glass, lubricating oils, linen.

*Roumania* .. .. 3·4 per cent. Building woods, petroleum products.

*Chile* .. .. 2·8 per cent. Nitrates.

<i>Japan</i>	..	..	11.8 per cent. (a large increase). Cotton and silk textiles, and yarn, tobacco.
<i>Greece</i>	..	..	2.2 per cent. Tobacco, wines, cheese, fresh and dried fruits, vegetable oils, fertilizers, soap.
<i>Russia</i>	..	..	2.2 per cent. Kerosene, wood, coal, tobacco, lamp glasses.

*Trade with the Sudan, 1934.*—Egypt imported from the Sudan approximately £E.872,700 worth of goods, including camels, cattle, sheep, salted fish, dates, ground nuts, melted butter, millet.

Egypt exported to the Sudan approximately £E.861,700 worth of goods, including cotton seed, cotton textiles, linen, sugar, cigarettes, confectionery, boots and shoes.

The above figures show a slight falling off of exports and a large increase in imports compared with recent years.

*Chambers of Commerce.*—There are chambers of commerce in the principal towns of Egypt, all acting under a central organization.

## 12. Shipping

(a) The ports of Egypt are Alexandria, Port Said, Suez, and on a smaller scale, Damietta, Mersa Matruh, Rosetta and Sollum.

The table on page 392 shows the arrivals of shipping by nationalities at the principal Egyptian ports, and cargo and passengers landed during the year 1934.

These figures show an increase in tonnage of 2,232,512 net tons as compared with 1932.

Fifty-four per cent. of the shipping which transitted the Suez Canal was British.

(b) The only ships of military importance based on Egypt are those of the Khedivial Mail Line, a subsidiary of the P. and O., and the Societé Misr. The following are statistics of the vessels owned by these companies :—

### Khedivial Mail Line

Steamer.	Ton- nage, gross.	Speed (knots)	Service.	Passenger Accommo- dation.			Cargo Capacity.  cu. ft.
				I	II	III	
" Khedive Ismail."	7,290	17	Alexandria-Piraeus- Naples-Genoa-Marseilles- Genoa-Naples- Piraeus-Alexandria.	140	—	88	268,042
" Mohamed Ali El-Kebir."	7,290	17	do.	140	—	88	268,042
" Fouadieh "	1,853	15	Alexandria-Port Said-Limassol- Famagusta-Larnaca- Limassol-Port Said- Alexandria.	110	—	48	99,110
" Taif " ..	1,590	11	Suez-Tor-El Wedj- Yambo-Jeddah-Port Sudan-Jeddah-Yambo- El Wedj-Tor-Suez.	26	32	—	88,625
" Talodi " ..	1,585	11	Suez-Jeddah-Suakin- Port Sudan-Jeddah- Yambo-Suez.	26	32	—	88,625
*" Zamalek "	1,566	13	Alexandria-Port Said- Jaffa-Haifa-Beyrouth- Tripoli-Lattakia- Alexandretta-Mersin- Tripoli-Beyrouth- Larnaca-Haifa-Jaffa- Port Said-Alexandria.	—	12	—	122,936
*" Zaafaran "	1,563	13	do.	—	12	—	122,936
" Abukir " ..	689	9	Based on Alexandria. Between any port in Eastern Mediterranean where cargo offers.	—	—	—	45,100

\* The "Zamalek" and "Zaafaran" can both carry 300 troops comfortably and 400 in emergency, in addition, 120 tons of water.

## Société Misr de Navigation Maritime (S.A.E.)

Steamer.	Tonnage, gross.	Speed (knots)	Service.	Passenger Accommodation.				Cargo Capacity.
				Luxe.	I.	II.	III.	
"El Nil" ..	7,667	16	Alexandria-Genoa-Marseilles.	12	126	69	38	4,500 tons.
"Zamzam"	8,093	15	—	16	94	245	1,250	4,000* "
"Kawsar"	8,139	15	—	18	81	246	1,550	5,000* "
"Postat" ..	5,219	12	Cargo liner	—	—	—	—	7,500 "
"Arafat" ..	4,466	12	"	—	—	—	—	6,500 "
	Disp. tons.							
"El Manزالah."	311	10	Cargo liner, Red Sea.	—	—	—	—	250 "
"Mariout"	334	9	"	—	—	—	—	250 "
"Edkou" ..	316	9	"	—	—	—	—	250 "
"Masr" ..	350	9	"	—	—	—	—	250 "
"Express"	378	12	Tug and salvage vessel (Alex.).	—	—	—	—	—

\* This tonnage can be carried when there are no deck passengers on the between decks as given above.

## Crops (General)—Egypt

	Sowing.	Picking.
Cotton .. ..	March-April.	September-October.
Maize (summer) ..	April.	July-August.
Maize (flood) ..	July-August.	November (December in Gharbia, Beni Suef and Aswan).
Millet (summer) ..	April-May.	August-September.
Millet (flood) ..	August.	November-December.
Rice (summer) ..	May-June.	October-November.
Rice (flood) ..	July-August.	November-December.
Sugar cane ..	March-April.	November-February.
Monkey nuts ..	March-June.	September-December.
Sesame .. ..	May-June.	August-October.
Wheat .. ..	November.	April-May (June in Gharbia).
Barley .. ..	November.	March-May.
Beans .. ..	November.	March-April.
Onions .. ..	November-February.	March-June.
Lentils .. ..	November.	March-April.
Flax .. ..	November.	April-May (none in Aswan).
Fennigreek ..	November (October in Dakhliéh).	March-April.
Bersim .. ..	September-November.	March-July.

## Crops—Lower Egypt

	Sowing.	Picking.
Cotton .. ..	March-April.	September-October.
Maize (summer) ..	April.	July-August.
Maize (flood) ..	July-August.	November (December in Gharbia).
Millet (summer) ..	May.	September (Sharkieh only).
Millet (flood) ..	August.	November (Sharkieh only).
Rice (summer) ..	May-June.	October-November.
Rice (flood) ..	July-August.	November-December.
Sugar cane ..	March-April.	November-December (January in Qaliuba).
Monkey nuts ..	March, May and June.	November.
Sesame .. ..	May-June.	October (August in Sharkieh).
Wheat .. ..	November.	May (June in Gharbia).
Barley .. ..	November.	May (April in Menufieh).
Beans .. ..	November.	April.
Onions .. ..	December-January-February.	April-May-June.
Lentils .. ..	—	—
Flax .. ..	November.	April.
Fennegreek ..	November (October in Dakhlieh).	April (May in Sharkieh).
Bersim .. ..	October (November in Sharkieh).	June.

## Crops—Middle Egypt

	Sowing.	Picking.
Cotton .. ..	March.	September.
Maize (summer) ..	—	—
Maize (flood) ..	August (July in Gizeh).	November (December in Beni Suef).
Millet (summer) ..	April-May.	August-September.
Millet (flood) ..	August (July in Fayoum).	November-December.
Rice (summer) ..	—	—
Rice (flood) ..	July.	November (Faiyum only).
Sugar cane ..	March-April.	November-December-January-February.
Monkey nuts ..	May.	November-December (Gizeh and Fayoum only).
Sesame .. ..	May.	September-October (Gizeh and Fayoum only).
Wheat .. ..	November.	May (June in Beni Suef).
Barley .. ..	November.	April (May in Gizeh).
Beans .. ..	November.	April (March in Fayoum).
Onions .. ..	November-December (February in Gizeh).	March-April-May-June.
Lentils .. ..	November.	April (May in Gizeh).
Flax .. ..	November.	April-May.
Fennegreek ..	November.	April.
Bersim .. ..	October-November.	June (May in Faiyum).

## Crops—Upper Egypt

	Sowing.	Picking.
Cotton .. ..	March.	September.
Maize (summer) ..	—	—
Maize (flood) ..	August.	November (December in Aswan).
Millet (summer) ..	April-May (June in Aswan).	August (September in Aswan).
Millet (flood) ..	August.	November-December
Rice (summer) ..	—	—
Rice (flood) ..	—	—
Sugar cane ..	April (March in Assuan).	February.
Monkey nuts ..	April	September-October (Asyut and Girga only).
Sesame .. ..	May-June.	August-September (not in Qena).
Wheat .. ..	November.	April (May in Asyut).
Barley .. ..	November.	March.
Beans .. ..	November.	March (April in Asyut).
Onions .. ..	November (October in Girga).	March (April in Asyut).
Lentils .. ..	November.	March.
Flax .. ..	November.	April (none in Aswan).
Fenngreek .. ..	November.	March (April in Asyut).
Bersim .. ..	September-October-November.	March-April (Qena-Girga) June-July (Aswan-Asyut).

**Arrivals of Shipping by Nationalities at the Principal Egyptian Ports and Cargo  
and Passengers landed (Year 1934)**

Port.	Number of Vessels.	Net Registered Tonnage.	Tons of Cargo Landed.		Passengers Disembarked.	
			For Egypt.	Transits.	For Egypt.	Transits.
<i>Alexandria—</i>						
British .. .. .	543	1,181,880	1,088,747	18,052	6,173	323
Egyptian .. .. .	148	194,775	171,435	57	883	2
French .. .. .	123	718,350	19,553	2	6,824	192
German .. .. .	119	258,753	264,688	3,000	78	8
Greek .. .. .	318	438,815	463,599	1,432	6,627	330
Italian .. .. .	367	1,039,710	127,748	1,156	15,650	915
American .. .. .	86	494,104	54,238	3,258	1,419	134
Dutch .. .. .	32	41,617	42,166	444	5	—
<i>Port Said—</i>						
(Suez Canal Non-transits)—						
British .. .. .	277	554,453	4,150	246,998	3,150	466
Egyptian .. .. .	42	49,187	4,894	7,357	2	—
French .. .. .	28	53,058	2,528	2,920	68	2
Greek .. .. .	154	166,671	4,840	58,447	1,065	369
Italian .. .. .	153	426,526	5,461	26,646	431	18
German .. .. .	68	70,361	563	17,627	12	—
Dutch .. .. .	10	27,442	—	17,789	—	—

**Arrivals of Shipping by Nationalities at the Principal Egyptian Ports and Cargo  
and Passengers landed (Year 1934)—*contd.***

Port.	Number of Vessels.	Net Registered Tonnage.	Tons of Cargo Landed.		Passengers Disembarked.	
			For Egypt.	Transits.	For Egypt.	Transits.
<i>Port Said—contd.</i>						
<i>(Suez Canal Transits)—</i>						
British .. .. .	1,544	7,977,809	54,216	544,703	8,885	3,479
Dutch .. .. .	274	1,533,394	4,205	42,460	1,096	211
French .. .. .	215	1,258,579	2,583	11,219	1,267	429
German .. .. .	403	1,800,312	12,336	100,197	400	123
Italian .. .. .	262	1,245,500	9,082	28,675	1,507	658
Japanese .. .. .	122	643,699	1,925	87,038	506	139
American .. .. .	54	271,865	754	7,212	135	39
Danish .. .. .	58	249,745	1,432	7,484	23	4
Norwegian .. .. .	74	272,541	3,752	30,065	29	9
Swedish .. .. .	46	211,336	2,100	7,461	11	10
<i>Suez—</i>						
<i>(Suez Canal Non-transits)—</i>						
British .. .. .	206	259,853	402,563	1,389	1,484	624
Italian .. .. .	77	66,730	32,136	3,030	304	53
Egyptian .. .. .	55	40,731	3,331	—	4,726	48

**Arrivals of Shipping by Nationalities at the Principal Egyptian Ports and Cargo  
and Passengers landed (Year 1934)—*contd.***

Port.	Number of Vessels.	Net Registered Tonnage.	Tons of Cargo Landed.		Passengers Disembarked.	
			For Egypt.	Transits.	For Egypt.	Transits.
<i>Suez—contd.</i>						
<i>(Suez Canal Transits)—</i>						
British .. .. .	794	4,025,337	41,993	1,189	430	65
Dutch .. .. .	186	991,364	9,414	248	70	—
French .. .. .	139	832,549	7,338	55	78	9
German .. .. .	211	946,823	6,258	765	44	5
Italian .. .. .	206	867,924	14,956	645	265	28
Japanese .. .. .	57	316,908	14,753	—	25	6
Norwegian .. .. .	55	209,952	5,926	5	3	1
American .. .. .	46	245,151	8,286	382	156	1
GRAND TOTAL (including other nationalities and smaller ports)	9,012	32,211,807	3,854,274	1,572,356	73,023	9,196
Of which British ..	3,734	14,229,275	1,594,126	811,331	20,853	4,957

## CHAPTER XVII

**THE EGYPTIAN ARMY**

This Chapter is under revision and will be issued for inclusion in this report when decisions have been given for the reorganization scheme which is at present (June, 1937) under consideration.

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## CHAPTER XVIII

**ARMED FORCES OTHER THAN THE EGYPTIAN ARMY**

This Chapter is under revision and will be issued for inclusion in this report when decisions have been given for the reorganization scheme which is at present (June, 1937) under consideration.

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## CHAPTER XIX

## AVIATION

Egyptian Army Air Force.

Under revision.

Aerodromes and Landing Grounds.

Meteorological.

Seasons.

Temperature.

Phenomena.

Atmospheric Disturbances likely to affect Aircraft.

Wind.

Light.

The Terrain from a Flying Point of View.

Delta and Nile Valley.

Libyan or Western Desert.

Arabian or Eastern Desert.

Sinai.

Suitability for Construction of Aerodromes.

Suitability of Coast for Seaplane Bases.

Local Fuel Resources.

(*N.B.*—Civil Aviation is dealt with in Chapter XV—Communications by Air.)

## 1. Air Force

(This paragraph is under revision.)

## 2. Aerodromes and Landing Grounds

A complete index of aerodromes and landing grounds in Egypt and Sinai is published by the Air Ministry (Air Publication 1438, of May, 1932). All the above aerodromes and landing grounds are marked on Map No. 1.

This index contains no reference to Almaza Aerodrome, the headquarters of the Egyptian Army Air Force, details of which are supplied below—

*Almaza Aerodrome.*

Location .. .. Lat. 30° 05' N., Long. 31° 21' E.,  
7 miles north-east of Cairo, and  
just east of Heliopolis.

Altitude .. .. Sea level.

Dimensions	..	Overall—2,000 by 1,400 yards. Landing area—1,300 by 900 yards.
How marked	..	Boundary markings. Equipped for night flying with Neon beacon, two floodlights and boundary lights defining landing area.
Lay-out	.. ..	Egyptian Government aerodrome. E.A.A.F. Camp is at the southern end and Misr Airworks, Ltd., together with Customs Office, at the north-east corner.
Fuel	.. ..	Ample stocks.
Repair facilities	..	Workshops are equipped with lathes, acetylene welding plant and other technical equipment. Can undertake all forms of work, except the most extensive overhauls.
Meteorological	..	Station under construction.
Communications	..	Wireless station under construction.
General remarks	..	All civil aircraft may use the aerodrome.

### 3. Meteorological

#### (a) Seasons

The climate of Egypt is sub-tropical, with a short winter and a prolonged summer. There is no monsoon proper in Egypt—the winter rainy season is due to the passage of depressions across the Mediterranean and not to the formation of a semi-permanent seasonal low pressure area over the land.

Rain occurs in Egypt chiefly between November and April; July, August and September are invariably rainless. The average annual rainfall at Alexandria is about 7.9 in. and at Cairo, 1.2 in. South of Faiyum, rainfall is usually negligible, although severe rainstorms occur very occasionally. Falls of about 1.6 in. in 24 hours occur very occasionally in the Cairo and Canal Zones.

The mean amount of cloud in Egypt is small at all times of the year and especially during the summer months. Between July and September, cloud forms over the delta on an average of two mornings in three. It is often very low, but of no great vertical thickness (200–500 ft.) and generally clears before 0800 hours (L.T.). The chief source of danger to aircraft is the lowness of the cloud, which is

apt to descend to ground level locally in the delta. Snow is practically unknown in Egypt, although a severe snow-storm, accompanied by a high wind, occurred in Salum, in 1934.

Fog is rare on the coast. Near Cairo, fogs are most common between November and February (frequency, 3-5 per month). They generally disappear before 0900 hours (L.T.) and their thickness is 100-200 ft., but in exceptional cases, 500 ft. The chief source of danger to aircraft is the suddenness with which fogs sometimes appear over the delta region. To westward, they probably do not extend far beyond the cultivation; to eastward, they often cease abruptly between the Suez Canal and El Arish; to northward they do not often reach the coast and to southward they probably do not extend much beyond Faiyum, although they have been known to persist as far as Asyut.

#### *(b) Temperature*

The coldest month is January, with a mean temperature of 54° and the warmest months are July and August, with mean temperatures of 82° F. at Cairo and 91° F. at Aswan. The absolute maximum temperatures in Lower Egypt occur during the Khamsin season (April to mid-June) when temperatures of 115-120° F. occur in the Cairo and Canal Zones.

High temperatures cause low values of atmospheric density and hence a reduction in aircraft performance, especially near the ground. For example, taking off at Heliopolis under the worst condition of temperature is equivalent to taking off about 3,600 ft. above mean sea level or, to put it another way, an aircraft would have to carry 10 per cent less load to secure a standard sea-level performance.

#### *(c) Phenomena*

Sandstorms occur during the Khamsin season (March to May). They are also associated with the strong, gusty, westerly winds in the rear of winter depressions. Cold air from Europe often finds its way direct to the Equator via Egypt, and its progress southwards is generally accompanied by sandstorms. As a rule, the sandstorms of Egypt are fairly widespread, so that it is not possible to fly round them. Even 400 miles out to sea, the visibility is sometimes reduced to 50 yards by dust from the Sahara. The height to which sand is raised is unknown, but it is probably

similar to the height reached in Iraq, viz., 5,000–7,000 ft., and in exceptional cases, 12,000 ft. Sand devils occur chiefly when a fresh supply of cold air has invaded Egypt. They can, as a rule, be easily avoided and should be avoided by light aircraft, as the vertical currents associated with such local whirls may be severe.

Gales occur chiefly in winter and on the coast. Inland, their frequency is small, though they are particularly likely to occur in the Canal Zone.

Cloud bursts, or very heavy rain during a short period of time, occur occasionally (*see* under Rain). It is on record that 11 in. fell in one day in Alexandria on 9th December, 1888—if this is correct, it must have been in the nature of a cloud burst. Sandstorms as a rule give warning of their approach. If they are due to the advance of cold air from the north or west, they can often be seen advancing as a wall-like structure. If the sand is being raised by the southerly wind in front of a Khamsin depression, the deterioration in visibility is, as a rule, gradual.

(d) *Atmosphere Disturbances likely to effect Heavily Loaded or Low Flying Aircraft*

The contact between the Delta and the surrounding desert and water and sand surfaces will cause a certain amount of bumpiness; in the Gulf of Suez, the strong north-easterly winds from Sinai or north-westerly from Egypt probably cause a degree of turbulence there which becomes dangerous to low flying aircraft, but in Egypt, generally speaking, the influence of topography on the flow of air is small.

(e) *Wind*

The prevailing wind in Egypt is northerly. Disturbed conditions are, however, experienced frequently during the winter months (December–February) owing to the passage of depressions along the Mediterranean. The southerly winds caused by the approach of these depressions often blow for days at a time and are then replaced by cooler winds from between west and north.

During March, April and May, depressions approaching from the Libyan Desert give rise to hot and very dry southerly winds (Khamsin), often accompanied by sandstorms. These sandstorms do not usually last for more than 2 or 3 days at a time and, with the passage of the depression, the wind veers to north-west, with a rapid fall of temperature.

From the middle of June to October, there is little interruption of the prevailing northerly wind.

The diurnal variation of wind is well marked, especially in summer. On the coast, the wind is usually at its maximum shortly after noon, whereas between Cairo and Ismailia, the maximum velocity is reached much later in the day—at Ismailia between 1500 and 1600 hours (L.T.), and at Cairo between 1900 and 2100 hours (L.T.). The increase in wind in the Ismailia district is often very sudden and may cause a sandstorm.

(f) *Light*

Except during fogs and during, and for some time after the cessation of a duststorm, the air is usually clear. In the summer, there is often a haze layer about 2,000 to 3,000 ft., which makes it difficult to see the ground clearly from that height. Considerable deterioration in visibility also occurs owing to heat shimmer. The length of day varies from 10.2 hours in mid-winter to 14.2 hours in mid-summer. Twilight lasts between 20 and 30 minutes.

#### 4. The Terrain, from the flying point of view

(a) Egypt is conveniently divided into four parts: the Delta and Valley of the Nile, the Libyan or Western Desert, the Arabian or Eastern Desert, and the Sinai Peninsula.

(i) *The Delta and the Valley of the Nile.*—The Delta consists of flat, low-lying land, closely irrigated. It is intersected with river streams, canals and irrigation channels, dividing up the country into small plots of land which are intensely cultivated, often flooded and soft and unsuitable for forced landings.

The soil is silt brought down by the river in flood.

On both sides of the River Nile, a continuous belt, varying in width, is cultivated, and has the same characteristics as the Delta. The soil is mostly irrigated desert sand.

As far as Aswan, the country on either side of the cultivation is flat desert, varied in places by hills and rugged areas; but in these areas sand flats can often be found suitable for forced landings.

South of Aswan, the country west of the river is black rocky country, unsuitable for forced landings. Still further south, the country consists mainly of flat, sandy stretches with numerous small hills. This type of country extends to about 20 miles north of El Derr, where it becomes rougher, with low ranges of hills and outcrops of rock up to the river bank.

The country between Toshki Gharb and Wadi Halfa varies considerably, the first few miles being flat, but from Abu Simbil onwards it is mainly hilly, intersected with wadis and flat, sandy stretches.

(ii) *The Libyan or Western Desert.*—Westwards from the Nile Valley into Tripoli stretches the Great Libyan Desert. The surface rocks in the north consist chiefly of limestone but, in the south, sandstone predominates. The highest peak, Gebel Oweinat (6,253 ft.) is situated in the extreme south-west corner of Egyptian territory. Like the mountain peaks in the Eastern Desert and Sinai, Gebel Oweinat is formed of igneous rock. Long chains of unpassable sand dunes which stretch for distances up to 310 miles in a N.N.W.—S.S.E. direction, form a conspicuous feature of the Libyan Desert. Though, as a whole, constituting one of the most arid and inhospitable regions of the world, the Libyan Desert contains a number of depressions wherein wells and springs furnish water in sufficient quantity to irrigate small areas and to support populations of several thousands. The depressions are the Western Oases, of which the principal (from south-east to north-west) are Kharga, Dakhla, Farafra, Bahariya and Siwa. Kharga is connected with the Nile Valley by railway. The majority of the other Oases can now, through the tracks opened by the Frontiers Districts Administration, be reached by motor-car in a comparatively short space of time, instead of by long and arduous camel journeys through waterless and lonely desert as heretofore. The Oases of Siwa and the Faiyum lie below the level of the sea. Between these two lies the vast Qattara depression, which embraces an area of some 6,948 square miles below sea-level and descends, at its deepest known point, to a depth of 439 ft. below the level of the Mediterranean.

(iii) *The Arabian or Eastern Desert.*—The country between the Nile and the Red Sea, known as the Arabian or Eastern Desert, though likewise generally speaking a very waterless region, presents a marked contrast to the Libyan Desert. Instead of forming a vast, monotonous plateau like the country on the other side of the Nile, the Eastern Desert

presents a great diversity of physiographical features, the most marked one being the great backbone of high and rugged mountains, composed chiefly of igneous and metamorphic rocks, which extends north-eastwards from Abyssinia to near Suez, and reappears as a detached mass on the Peninsula of Sinai. The principal peaks of the Egyptian portion of this mountain chain are (from north to south) Gebels Gharib (5,757 ft.), Abu Dokhan (5,450 ft.), Sheyib (7,154 ft.), Hamra (6,457 ft.), Faraid (4,480 ft.). Flanking the mountain chain to the west, between the axis of the range and the Nile, are plateaux of sandstone and limestone, dissected by wadis, often of great length and depth, with some wild vegetation and occasional wells and springs. The mountain axis being much nearer to the Red Sea than to the Nile, the slopes on the eastern side are, as a rule, much steeper than those facing westwards, and the sedimentary flanking plateaux are absent for long distances along the Red Sea coast. Wells and springs are more frequent in the south parts of the Eastern Desert than in the north, owing to proximity to the tropical rain zone. The roads through the Eastern Desert mostly follow the course of the main wadis from well to well and, here and there, are to be found small encampments of the wandering Arabs who form the scanty population of the region.

(iv) *The Sinai Peninsula*.—From the north (Mediterranean) coast, which is flat and sandy, the ground of Sinai gradually rises to the south for about 185 miles into a highly dissected limestone plateau, terminating in the great escarpment of El Tih; in some parts, this escarpment rises to over 4,500 ft. above sea-level. South of El Tih, the character of the country changes abruptly, the southern third of the Peninsula being composed of rugged granite mountains, intersected by deep ravines. The highest peaks of these mountains such as Gebels Katherina (8,683 ft.), Um Shomer (8,535 ft.) and El Thebt (8,033 ft.), are higher than any of the mountains in Egypt proper. Springs and wells occur in fair abundance in Sinai and running water (mostly brackish) is found at a few points. Sinai contains no towns of any importance except El Arish. The deserted village of Nekhl is a landmark in the central area. Tor, on the Gulf of Suez, is of importance as a quarantine station.

The desert areas are quite suitable for flying and the surface is mostly good for forced landings. The paucity of features renders navigation difficult and, owing to the scarcity of habitation and water, flying operations are somewhat hazardous.

(b) *Suitability of the Terrain for the Construction of Aerodromes*

Aerodromes can be constructed almost anywhere in the desert of almost unlimited size and there is generally no difficulty in performing a forced landing anywhere. The river valley itself is unsuitable for the construction of landing grounds and they are invariably made on the edge of the cultivation in the desert.

(c) *Suitability of the Coast for Seaplane Bases, etc.*

With the exception of Suez and Port Sudan, the whole of the west coast of the Red Sea is devoid of any place which could be considered as a seaplane base. At these two places, permanent facilities exist which, with a little further construction, could be made into first class seaplane bases.

There are, however, certain places at which either seaplane moorings exist or could easily be laid down and which could be used as temporary bases. These places are: Ras el Adabiya, Ras Abu Dera, Zeit Bay, Hurghada, Safaga, Berenice and Mersa Sha'ab (Sudan). Of these, Berenice and Mersa Sha'ab are the best as, in each case, ample stretches of water are practically land-locked, thereby affording good shelter for aircraft at moorings.

## 5. Local Fuel Resources

See Chapter XVI—Resources, para. 7, especially sub-para. (e) under heading "Aviation Spirit."

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## APPENDIX I

## CONVERSION TABLES—WEIGHTS—MEASURES

Both local weights and measures, and also the metric system, are in common use in Egypt. The following tables have, therefore, been included in this Appendix :—

Table 1.—Metres to inches and yards.

- „ 2.—Kilometres to miles.
- „ 3.—Square metres to square yards.
- „ 4.—Kilogrammes to pounds avoirdupois.
- „ 5.—Weight: Egyptian to English and French, and vice versa.
- „ 6.—Length: Egyptian to English and French, and vice versa.
- „ 7.—Rough rules for conversion and for approximate estimation.

TABLE 1

Metres to Inches and Yards

<i>Metres.</i>		<i>Inches.</i>		<i>Yards.</i>
1	.. ..	39·3708	..	1·093
2	.. ..	78·7416	..	2·187
3	.. ..	118·112	..	3·280
4	.. ..	157·483	..	4·373
5	.. ..	196·854	..	5·468
6	.. ..	236·225	..	6·561
7	.. ..	275·595	..	7·655
8	.. ..	314·966	..	8·749
9	.. ..	354·337	..	9·842
10	.. ..	393·708	..	10·936
<i>Example :—</i>				
41 metres to		Inches.		Yards.
40 „	=	1574·83		43·73
1 metre	=	39·3708		1·093
41 metres	=	1614·2008		44·823
41 metres	=	1614·20	inches =	44·823 yards.
41 decimetres	=	161·420	„ =	4·4823 „
41 centimetres	=	16·1420	„ =	·44823 „
41 millimetres	=	1·61420	„ =	·044823 „

TABLE 2

## Kilometres to Miles

<i>Kilometres.</i>		<i>Miles.</i>		<i>Kilometres.</i>		<i>Miles.</i>
1	=	0.621382		6	=	3.72829
2	=	1.24276		7	=	4.34968
3	=	1.86415		8	=	4.97106
4	=	2.48553		9	=	5.59244
5	=	3.10691		10	=	6.21382

*Example* :—47 kilometres to miles.

40	"	=	24.85530	miles.
7	"	=	4.34968	"
47	"	=	29.20498	"

TABLE 3

## Square Metres to Square Yards

<i>Square Metres.</i>		<i>Square Yards.</i>		<i>Square Metres.</i>		<i>Square Yards.</i>
1	=	1.19603		6	=	7.17620
2	=	2.39207		7	=	8.37223
3	=	3.58810		8	=	9.56827
4	=	4.78413		9	=	10.7643
5	=	5.98017		10	=	11.96033

*Example* :—62 square metres to square yards.

60	"	"	=	71.76200	square yards.
2	"	"	=	2.39207	"
62	"	"	=	74.15407	"

TABLE 4

## Kilogrammes to Pounds Avoirdupois

<i>Kilo-grammes.</i>		<i>Pounds.</i>		<i>Kilo-grammes.</i>		<i>Pounds.</i>
1	=	2.2046		6	=	13.2277
2	=	4.4092		7	=	15.4323
3	=	6.6139		8	=	17.6370
4	=	8.8185		9	=	19.8416
5	=	11.0231		10	=	22.0462

*Example* :—98 kilogrammes to pounds.

90	"	=	198.416	pounds.
8	"	=	17.637	"
98	"	=	216.214	"

TABLE 5

## Weight

<i>Okes.</i>	<i>Pounds.</i>	<i>Kilo-grammes.</i>	<i>Rotl.</i>	<i>Pounds.</i>	<i>Kilo-grammes.</i>
1	2.7514	1.2480	1	0.9905	0.4493
2	5.5027	2.4960	2	1.9810	0.8986
3	8.2541	3.7440	3	2.9715	1.3478
4	11.0055	4.9920	4	3.9620	1.7971
5	13.7568	6.2400	5	4.9525	2.2464
6	16.5082	7.4880	6	5.9430	2.6957
7	19.2596	8.7360	7	6.9334	3.1450
8	22.0109	9.9840	8	7.9239	3.5942
9	24.7623	11.2320	9	8.9144	4.0435

<i>Pounds.</i>	<i>Kilo-grammes.</i>	<i>Okes.</i>	<i>Kilo-grammes.</i>	<i>Pounds.</i>	<i>Okes.</i>
1	0.4536	0.3634	1	2.2046	0.8013
2	0.9072	0.7269	2	4.4092	1.6026
3	1.3608	1.0904	3	6.6139	2.4039
4	1.8144	1.4538	4	8.8185	3.2052
5	2.2680	1.8173	5	11.0231	4.0065
6	2.7216	2.1807	6	13.2277	4.8078
7	3.1752	2.5442	7	15.4323	5.6091
8	3.6287	2.9076	8	17.6370	6.4104
9	4.0823	2.2711	9	19.8416	7.2117

## Conversion factors.

1 dirhem = 3.12 grammes = 1.761 drams = 48.15 grains.  
 1 rotl = 144 dirhems = 449.28 grammes = 0.99049 grains.  
 1 oke = 400 dirhems = 1.248 kilogrammes = 2.75137 lb.  
 1 kantar = 100 rotls = 44.928 kilogrammes = 99.05 lb.  
 1 gramme = 0.3205 dirhem = 15.4323 grains.  
 1 grain = 0.0648 gramme.  
 1 oz. (avoirdupois) = 28.3495 grammes = 9.0864 dirhems.  
 1 kilogramme = 2.2258 rotls = 0.8013 oke = 2.20462 lb.  
 1 lb. = 453.593 grammes = 0.36346 oke.  
 1 ton = 1016.047 kilogrammes = 814.14 okes.

TABLE 6

## Length

<i>Qassaba.</i>	<i>Metre.</i>	<i>Yard.</i>	<i>Metre.</i>	<i>Qassaba.</i>	<i>Yard.</i>
1	3.55	3.8824	1	0.28169	1.09363
2	7.10	7.7648	2	0.56338	2.18726
3	10.65	11.6472	3	0.84507	3.28090
4	14.20	15.5296	4	1.12676	4.37453
5	17.75	19.4120	5	1.40845	5.46817
6	21.30	23.2944	6	1.69014	6.56180
7	24.85	27.1768	7	1.97183	7.65543
8	28.40	31.0592	8	2.25352	8.74906
9	31.95	34.9416	9	2.53521	9.84270

## Conversion Factors

1 kadan = 1 foot.

1 qassaba = 3.55 metres = 3.8824 yards.

1 yard = 0.91438 metre = 0.25757 qassaba.

1 metre = 1.09363 yards = 0.28169 qassaba.

*Surface*

1 square qassaba = 0.003 feddan = 12.6025 square metres = 135.6571 square feet.

1 feddan = 4200.833 square metres = 45219.03 square feet = 1.03805 acres.

1 square foot = 0.0929 square metre = 0.0073715 square qassaba.

1 square metre = 10.7643 square feet = 0.07935 square qassaba.

*Capacity*

1 ardeb\* = 198.0 litres = 43.579 gallons.

1 gallon = 4.5436 litres = 0.022947 ardeb.

1 litre = 0.2201 gallon = 0.00505 ardeb.

\* For boat measure 1 ardeb = 300 rotls.

TABLE 7

## Rough Conversion Factors

(i) Millimetres to inches.	Multiply millimetres by 4 and divide by 100.	$\frac{\text{mm} \times 4}{100}$
(ii) Metres to yards.	Multiply metres by 11 and divide by 10.	$\frac{\text{m.} \times 11}{10}$
(iii) Kilometres to miles.	Multiply kilometres by 5 and divide by 8.	$\frac{\text{Km.} \times 5}{8}$
(iv) Kilogrammes to lbs.	Multiply kilogrammes by 22 and divide by 10.	$\frac{\text{Kg.} \times 22}{10}$
1,000 kilogrammes = 1 ton (approx.)		
(v) Litres to pints.	Multiply litres by 7 and divide by 4.	$\frac{1 \times 7}{4}$
(vi) Litres to gallons.	Multiply litres by 22 and divide by 100.	$\frac{1 \times 22}{100}$
(vii) Okes to lbs.	Multiply Okes by 11 and divide by 4.	$\frac{\text{Okes} \times 11}{4}$

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## APPENDIX 2

## CURRENCY

The monetary unit of Egypt is the Egyptian Pound (Gold) divided into 100 piastres or 1,000 milliemes. It weighs 8.5 grammes and contains 7.4375 grammes of fine gold. Its present value in sterling (1936) is £1 0s. 6½*d.*

The following table shows the coins in circulation and their legal tender :—

Metal.	Denomination.	Weight in Grammes.	Legal Tender.
Gold .. ..	100 piastres (1 Pound).	8.5	} To an unlimited amount.
	50 piastres (½ Pound).	4.25	
Silver .. ..	20 piastres.	28.00	} Up to 200 piastres.
	10 piastres.	14.00	
	5 piastres.	7.00	
	2 piastres.	2.80	
Nickel .. ..	10 milliemes (1 piastre).	5.50	} Up to 10 piastres.
	5 milliemes (½ piastre).	4.00	
	2 milliemes	2.50	
Bronze .. ..	1 millieme.	4.40	} Up to 10 piastres.
	½ millieme.	3.333	

Bank notes are issued by the National Bank of Egypt in various denominations : £1, £5, £10, £50, £100. These notes are legal tender and inconvertible.

The British sovereign is also legal tender at the rate of Pt. 97½. This rate is less than its gold par equivalent in Egyptian currency. As Egyptian gold coins are practically withdrawn from circulation, the British sovereign, at Pt. 97½, is the real basis of the Egyptian currency.

The 20-franc piece and equivalent gold pieces of the former Latin Monetary Union are permitted to circulate and are given a fixed value of Pt. 77.15.

## APPENDIX 3.—DESERT WATER SUPPLIES

### A.—SINAI

*Notes.*—The Serial Numbers in column (1) refer to the numbers shown on General Map of Egypt (Map No. 1).

Wells shown in *Italics* are of little or no military value.

In Sinai, the word "Bir" means a dug well, but carries no assurance of a permanent supply.

The word "Hod" is applied to the palm oases of the Mediterranean coast, where a supply can be obtained anywhere from 5 to 20 ft. down.

An "Ain" is a running or dripping water on the surface and usually means a perennial supply.

A "Thamilet" is a water-hole in low ground where rain water collects, and merely implies a small quantity of fresh water for a few weeks after rain.

"Harabas" are cisterns cut in the rock.

#### 1. Road, Suez—Jerusalem

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Serial No.	Name.	Type.	Location.	Whether Area capable of Development.	If approachable by M.T.	Remarks. S = Salty—hardly drinkable. F = Fair—drinkable. G = Good sweet water.
1	<i>El Shatt</i> .. ..	<i>Tank</i>	<i>In Quarantine Station</i>	—	Yes	G.—Water is brought from Suez by boat.
2	<i>Murr</i> .. ..	<i>Bir</i>	9 miles from <i>El Shatt</i> , 200 yards south of main road.	Yes	No	F.—Sand blows into the well. Needs constant digging out.
3	<i>Mabuq</i> .. ..	<i>Bir</i>	17 miles east of <i>El Shatt</i> , 5 miles south of road.	Yes	Yes	F.—10 ft. deep, plentiful supply. Important well at commencement of Palestine campaign.
4	<i>Themada</i> .. ..	<i>Bir</i>	59 miles from <i>El Shatt</i> , 1 mile south of road.	No	No	S.—Water scarce.
5	<i>Hassana</i> .. ..	<i>Bir</i>	88 miles from <i>El Shatt</i> , 400 yards north of road.	Yes	Yes	G.—The best water supply of Central Sinai. Estimated to support 2 Battalions for an unlimited period.
6	<i>Hadhira</i> .. ..	<i>Bir</i>	113 miles from <i>El Shatt</i> , in amphitheatre north of road.	No	No	F.—One <i>Bir</i> and several <i>Thamilet</i> .
7	<i>Moweillah</i> .. ..	<i>Bir</i>	134 miles from <i>El Shatt</i> , in <i>Wadi Moweillah</i> , 1 mile south of road.	No	No	S.—After rain, more water might be obtainable.

# APPENDIX 3.—Desert Water Supplies—continued

## A.—Sinai—continued

### 1. Road, Suez-Jerusalem—continued

(1) Serial No.	(2) Name.	(3) Type.	(4) Location.	(5) Whether Area capable of Development.	(6) If Approachable by M.T.	(7) Remarks. S = Salty—hardly drinkable. F = Fair—drinkable. G = Good sweet water.
8	Kosseima .. ..	Bir and Ain	138 miles from El Shatt	No	Yes	G.—One Bir and one Ain. The Bir holds about 750 gallons of water and takes 6 hours to refill. Ain has been known to dry up.
9	Gedeirat .. ..	Ain	4 miles E.S.E. of Kosseima	No	No	G.—Several springs combine to form a stream which irrigates about 2 miles of cultivation. It is considered that sufficient drinking water is available at 12 and 13 combined for a Division, but at the expense of the crops.
10	Bircin .. ..	Bir	2 miles east of Sinai-Palestine Frontier.	Yes	Yes	G.—Signs of extensive Turkish occupation.
11	El Auja (just over the Palestine border).	Bir	8 miles from Bircin	Yes	Yes	G.—Two wells open and large reservoir. Five disused wells, which could be reopened, could support at least one Infantry Brigade.

### 2. Road, Suez-Akaba

1	El Shatt .. ..	} See Section 1 above.				
2	Murr .. ..					
12	Sudr Heitan .. ..	Bir	47 miles from El Shatt	No	Yes	S.—3 to 5 miles after the road junction there are three successive water holes. The third hole holds a little water at 115 ft.
13	Nekhl .. ..	Bir	80 miles from El Shatt, 100 yards from Police Post.	Yes	Yes	F.—Three wells, only one of which is in use. Estimated as sufficient for 1 Battalion.
14	El Themed .. ..	Bir	120 miles from El Shatt	Yes	—	G.—Two good wells in use. Estimated as sufficient for 1 Battalion.

# APPENDIX 3.—Desert Water Supplies—continued

## A.—Sinai—continued

### 2. Road, Suez-Akaba—continued

(1) Serial No.	(2) Name.	(3) Type.	(4) Location.	(5) Whether Area capable of Development.	(6) If approachable by M.T.	(7) Remarks. S = Salty—hardly drinkable. F = Fair—drinkable. G = Good sweet water.
15	El Kuntilla .. ..	Bir	148 miles from El Shatt	No	—	G.—Ample supply of water from a deep well. Considerable preparation necessary before extension. Estimated as sufficient for 1 Battalion.
16	Bir Gattar .. ..	Haraba	180 miles from El Shatt	No	No	G.—Rain water collected in a cistern.
17	Aqaba .. ..	Hod	188 miles from El Shatt	Yes	Yes	F.—Ample supply at 2 to 6 ft. by digging on the sea-shore. Estimated as sufficient for 1 Battalion.

### 3. Road, Kosseima-El Arish

18	El Rafa .. ..	Bir	27 miles N.W. of Kosseima	Yes	No	G.—Small supply.
19	Abu Aweigla .. ..	Bir	30 miles N.W. of Kosseima	Yes	No	G.—Small supply.
20	Aulad Ali .. ..	Bir	38 miles N.W. of Kosseima	Yes	No	G.—Small supply.
21	Lahfan .. ..	Bir	9 miles S.E. of El Arish	No	No	G.—Large supply from one well.
22	El Arish .. ..	Bir	On north coast	Yes	Yes	G.—Water obtainable anywhere by digging. Estimated as sufficient for a Division.

### 4. Miscellaneous

23	Moussa .. ..	Ain	7 miles south of El Shatt	No	Yes	G.—Twelve large water holes. Would have to be cleaned out. Watered a Cavalry Brigade for some time when holding the Suez Canal.
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Inaccessible Birs and Hods on the old camel routes and in the vicinity of the Kantara-Rafa Railway are not listed, as up-to-date statistics are necessarily lacking.

APPENDIX 3.—Desert Water Supplies—*continued*

## B.—WESTERN DESERT

Notes.—The Serial Numbers in column (1) refer to the numbers shown on the General Map of Egypt (Map No. 1).

Only wells of military importance are shown, but other wells will be found marked on the 1/500,000 maps published by the Survey of Egypt, with marginal references.

In the Western Desert, a "Bir" has a different meaning to those of Sinai. It is a cistern, often dating from Roman times, filled by rainfall, and therefore undependable, except after rain. Though generally marked by a mound of earth, some "Birs" are difficult to find.

A "Sania" is a deep well, deriving its source from an underground spring. Water is usually good, but not over abundant. The watering of any considerable number of troops or animals would present difficulties.

An "Ain" is a surface supply, as in Sinai.

## Coastal Route, Alexandria—Salum

(1) Serial No.	(2) Name.	(3) Type.	(4) Location.	(5) Whether Area capable of Development.	(6) If approachable by M.T.	(7) Remarks. S = Salty—hardly drinkable. F = Fair—drinkable. G = Good sweet water.
24	El Daba .. ..	See remarks.	98 miles west of Alexandria	Yes	Yes	G.—Group of wells immediately north of station and at Bir Jemeina, 4 miles north of station, water bearing area capable of development.
25	Sanyet el Qasaba ..	Sania	150 miles west of Alexandria	Yes	Yes	G.—At depth of 48 ft. From here to Mersa Matruh there are several wells.
26	Mersa Matruh .. ..	See remarks.	178 miles west of Alexandria	—	Yes	G.—Iron tanks at harbour refilled from Alexandria every week. Water also brought by motor tank lorry from Serial No. 7.
27	El Qasr .. ..	Bir	4 miles west of Mersa Matruh	Yes	Yes	G.—Numerous shallow wells, with lifting apparatus along south edge of sand dunes, and a recently discovered old Roman shaft giving access to underground tunnels in the sand dunes. It is estimated that the latter source above would supply a force of an Infantry Brigade with attached troops of all arms.

APPENDIX 3.—Desert Water Supplies—*continued*B.—Western Desert—*continued*Coastal Route, Alexandria—Salum—*continued*

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Serial No.	Name.	Type.	Location.	Whether Area capable of Development.	If approachable by M.T.	Remarks. S = Salty—hardly drinkable. F = Fair—drinkable. G = Good sweet water.
28	Sidi Barrani .. ..	Sania	253 miles west of Alexandria	Yes	Most wells	G.—Three wells near barracks and other wells in neighbourhood. In 1916, between 4,000 and 5,000 troops watered here without difficulty.
29	Salum .. ..	See remarks.	307 miles west of Alexandria	—	Yes	G.—Distilling plant and tanks filled by water brought from Alexandria, from which water is pumped to barracks on top of the hill. Adequate for Egyptian garrison of 1 Battalion and 1 Battery. (Local wells only suitable for native population.)

## Oases

30	(a) Wadi Natrun Area— Bir Victoria .. ..	Bir	On Khatatba—Bir Hooker Railway.	No	Yes	G.—Windmill pump; tank holds 4 tons.
31	Bir Hooker .. ..	Bir	Wadi Natrun	No	Yes	G.—Abundant supply, and other wells in vicinity. Estimated sufficient for a force of 1 Infantry Brigade.
32	(b) Moghara— Bir Nahda .. ..	Bir	South end of oasis	Yes	Yes	F.—Several springs. One recently dug well gives better water.
33	(c) Qara— Qara Oasis .. ..	Sania	Qara village	No	Yes	F.—One well only. 500 yards west of village under low cliff. S.—Remainder unfit for drinking.

# APPENDIX 3.—Desert Water Supplies—continued

## Oases—contd.

## B.—Western Desert—continued

(1) Serial No.	(2) Name.	(3) Type.	(4) Location.	(5) Whether Area capable of Development.	(6) If Approachable by M.T.	(7) Remarks. S = Salty—hardly drinkable. F = Fair—drinkable. G = Good sweet water.
34	(d) <i>Siwa</i> — Siwa Oasis .. ..	Artesian, Sanias.	Scattered over the oasis	Yes	Yes	G.—Artesian well at Siwa village. Sanias throughout the oasis giving abundant supplies.
35	(e) <i>Bahariya</i> — Bahariya Oasis .. ..	Springs and shallow wells.	Scattered over the oasis	Yes	Some wells	F.—Practically unlimited. Slightly tainted.
36	(f) <i>Faraфра Oasis Area</i> — Ain Dalla Oasis .. ..	Spring	40 miles N.W. of Faraфра	No	No	G.—On route to Siwa Oasis.
37	Faraфра .. ..	Springs	Near the village under the western escarpment.	No	Some wells	F.—Twenty wells. Supply limited.
38	(g) <i>Kharga Oasis</i> — Kharga .. ..	Wells	} On track through oasis from north to south. {	Yes	Yes	G.—Unlimited. Excellent quality. Several well-boring machines.
39	Bulaq .. ..	"		Yes	Yes	F.—Unlimited by digging.
40	Beris .. ..	"		Yes	Yes	F.
41	(h) <i>Dakhla Oasis</i> — Dakhla Oasis .. ..	Wells	Scattered over the oasis	Yes	Some wells	G.—Unlimited.
42	<i>South of Kharga Oasis</i> — Bir Nakhlai .. ..	Well	On track to Wadi Halfa and 100 miles N.N.W. of it.	Yes	Yes	G.—One well 3 ft. deep gives 16 gallons per hour. At least 20 holes could be dug. Estimated sufficient for 1 Battalion.

# APPENDIX 3.—Desert Water Supplies—continued

## B.—Western Desert—continued

### Oases—contd.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Serial No.	Name.	Type.	Location.	Whether Area capable of Development.	If approachable by M.T.	Remarks. S = Salty—hardly drinkable. F = Fair—drinkable. G = Good sweet water.
	<i>Kharga-Oweinat—</i>					
43	Bir Tarfawi .. ..	Well	Adjacent to track	Yes	Yes	G.—By digging.
44	Bir Messaha .. ..	Well	Adjacent to track	Yes	Yes but difficult to find.	G.—Unlimited. Well with winch, 67 metres deep. Rope should be taken.
75	Bir Debbes (West) ..	Shallow well 3 feet deep, usually requires digging out.	Among scrub and sand-hills 14 miles west of Darb el Arba'in; 3 miles south west of rounded black hill.	Yes	Yes	G.
76	Bir Kiseiba .. ..	Small pool at foot of palms.	On Darb el Arba'in 26 miles north of El Sheb.	No	Yes	F.
77	El Sheb .. ..	Small permanent pool; water also available by digging 3 ft.	On Arba'in road, 75 miles north of Selima.	Yes	Yes	F.
78	Bir Murr .. ..	Water holes 6 ft. deep, usually requires digging out.	On Arba'in road, 75 miles north of El Sheb.	No	Yes	S.
79	Dunqul .. ..	Water holes 4 ft. deep. Water holes 5 ft. deep.	At palm clump on edge of cliff, 95 miles S.W. of Aswan. In Wadi, 2 miles further north.	No No	Light vehicle only. No	F. F.

# APPENDIX 3.—Desert Water Supplies—continued

## Oases—contd.

## B.—Western Desert—continued

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Serial No.	Name.	Type.	Location.	Whether Area capable of Development.	If approachable by M.T.	Remarks. S = Salty—hardly drinkable. F = Fair—drinkable. G = Good sweet water.
	<i>Kharga-Oweinat —contd.</i>					
80	Kurkur .. ..	2 small pools fed by springs.	Depression by lime stone plateau 40 miles W.S.W. of Aswan.	No	No	G.
81	Bir Nakheila .. ..	Water hole 6 ft. deep, usually filled up.	At palm clump between Kharga and Dunqul, 30 miles east of Arba'in road.	No	Yes	S.
82	Ain el Dakar .. ..	Flowing wells.	Southernmost well of Kharga Oasis, 64 miles south of Kharga Station.	Yes	Yes	G.
83	Ain El Ghazal .. ..	Flowing wells.	Northernmost well of Kharga Oasis, 22 miles north of Kharga Station.	Yes	Yes	G.
84	Ain El Ghazal .. ..	Well 55 ft. deep.	At Kilo 100 on Kharga-Dakhla road, 62 miles W.S.W. of Kharga Station.	Yes	Yes	G.
85	Ain Sheikh Mawhub ..	Flowing wells.	Outlying western village of Dakhla Doads, 19 miles N.W. of Mut.	Yes	Yes	G.
86	Bir Abu Mungar .. ..	Small spring.	50 miles S.W. of Farafra	No	Yes	F.
87	Ain Khalifa .. ..	Wells, water near surface of ground.	25 miles S.W. of Farafra	Yes	Yes	G.

# APPENDIX 3.—Desert Water Supplies—continued

## B.—Western Desert—continued

### Oases—contd.

(1) Serial No.	(2) Name.	(3) Type.	(4) Location.	(5) Whether Area capable of Development.	(6) If approachable by M.T.	(7) Remarks. S = Salty—hardly drinkable. F = Fair—drinkable. G = Good sweet water.
	<i>Kharga-Oweinal—contd.</i>					
88	Bir Kerawein ..	Wells, 8 ft. deep, usually require cleaning out.	35 miles east of Farafra	No	Yes	F.
89	Ain El Wadi .. ..	Small dirty pool.	In chalk area at north end of Farafra depression.	No	Yes	F.
90	El Hez .. ..	Flowing wells.	Outlying village of Bahariya Oasis, 26 miles S.W. of Bawitti.	Yes	Yes	G.
91	Deir Samweil ..	Wells, 30 ft. deep.	In and around Monastery in Wadi Muelih.	Yes	Yes	G.
92	Ain El Rayan ..	Two springs	In sandy area of Wadi Rayan.	No	Yes	F.
93	El Areg .. ..	Water holes 5 ft. deep.	At south side of Sabakha in Areg depression, 60 miles E.S.E. of Siwa.	No	Yes	F.
94	Hatayet Labbaq ..	Shallow well, or by digging 6 ft.	Depression among sand dunes, 10 miles S.S.E. of Siwa.	Yes	Yes	F.
96	Ain Girba .. ..	Spring and small pool.	Among palms near S.W. edge of depression, 13 miles N.W. of Siwa.	Yes	Yes	F.

# APPENDIX 3.—Desert Water Supplies—continued

## Oases—contd.

## C.—EASTERN DESERT

(1) Serial No.	(2) Name.	(3) Type.	(4) Location.	(5) Whether Area capable of Development.	(6) If approachable by M.T.	(7) Remarks. S = Salty—hardly drinkable. F = Fair—drinkable. G = Good sweet water.
<i>On the Red Sea Coast—</i>						
45	Bir Abu Shaar ..	Bir	16 miles north of Hurghada	No	Yes	S.—Suitable for radiators. Regained original level 20 minutes after drawing 75 gallons.
46	Hurghada .. ..	—	Port	—	Yes	G.—All water transported from Suez.
47	Safaga .. ..	—	Port	—	Yes	G.—All water transported from Suez.
48	Bir abu Merewat ..	Bir	Mines 15 miles inland from Safaga.	No	Yes	F.—Slightly brackish. Small supply.
49	Bir Safaga .. ..	Bir	10 miles south of Port Safaga.	No	Yes	S.—About 100 gallons suitable for radiators.
50	Qosseir .. ..	—	Port	—	Yes	G.—Condensed from sea.
<i>On Qosseir-Kift Track—</i>						
51	Bir Ambagi .. .	Bir	5 miles west of Qosseir	No	Yes	S.—Brackish.
52	Bir Inglisi .. ..	Bir	12 miles from Bir Ambagi	No	Yes	F.—Deep cemented well, unlimited brackish water.
53	Bir Seyala .. ..	Bir	12 miles from Bir Inglisi	No	Yes	F.—A cemented well with troughs. Unlimited brackish water.
54	Bir Edied .. ..	Bir	1 mile N.N.W. of Bir Seyala	No	Yes	F.—Similar to Bir Seyala.
55	Bir Fowakir .. ..	Bir	24 miles from Bir Seyala	No	Yes	F.—Large cement well with winch. Unlimited. Boil or chlorinate.
56	Bir Hamamar ..	Bir	5 miles from Bir Fowakir	No	Yes	F.—Large Roman well, 112 ft. deep. Unlimited brackish water.

# APPENDIX 3.—Desert Water Supplies—continued

## C.—Eastern Desert—continued

### Oases—contd.

(1) Serial No.	(2) Name.	(3) Type.	(4) Location.	(5) WhetherArea capable of Development.	(6) If approachable by M.T.	(7) Remarks. S = Salty—hardly drinkable. F = Fair—drinkable. G = Good sweet water.
	<i>On the Red Sea Coast— contd.</i>					
57	Bir el Geyta .. ..	Bir	28 miles from Bir Hamamar	No	Yes	S.—Three cemented wells. Brackish.
58	Qena .. ..	—	On River Nile	—	—	G.—Water distilled from Nile. Un- limited.
59	F.D.A. Post .. ..	Bir	3 miles north of Qena	No	Yes	G.—Limited supply.
60	Bir Esel .. ..	Waterhole 13 feet deep.	On coast road 14 miles S. of Quseir.	No	Yes	S.—Large supply.
61	Bir Sigdit .. ..	Two water- holes 13 feet deep.	83 miles north east of Idfu	No	Yes	G.—Abundant supply.
62	Bir Um Qubur .. ..	26 feet deep	75 miles east of Kom Ombo	No	Yes	F.—100 camels.
63	Bir Ranga .. ..	Shallow hole	On coast road 138 miles south of Quseir.	No	Yes	S.—Large supply.
64	Bir Taw .. ..	Three springs and a pond.	Nearest water to Berenice, 12 miles due west.	No	Yes	G.—About 40,000 gallons usually avail- able in pond.
65	Bir Shut .. ..	Small spring	In plain north of G. Dahanib	No	Yes	G.
66	Bir Shenshef .. ..	Surface flow in a gorge.	Nine miles from coast road	No	—	F.—Variable in quantity. Usually fit for 50 camels.

# APPENDIX 3—Desert Water Supplies—continued

## Oases—contd.

## C.—Eastern Desert—continued

(1) Serial No.	(2) Name.	(3) Type.	(4) Location.	(5) Whether Area capable of Development.	(6) If approachable by M.T.	(7) Remarks. S = Salty—hardly drinkable. F = Fair—drinkable. G = Good sweet water.
	<i>On the Red Sea Coast— contd.</i>					
67	Bir Um Hibal ..	47 feet deep; dangerous; often caves in.	On road to Sudan 35 miles south of Aswan.	No	Yes	G.—Large supply.
68	Bir Abraq .. ..	Spring forming pool in gully of Gebel Abraq	—	No	Yes	G.—Abundant.
69	Bir Abu Sa'fa ..	4 springs at foot of cliff.	In gorge off Wadi Hodein	No	Yes	G.—Abundant.
70	Bir Shalatein ..	Shallow hole.	On coast road 97 miles south of Quseir.	No	Yes	S.—Drinkable only by camels. Abundant.
71	Bir Aqwamtra ..	Large well and pool.	27 miles from Halaib	No	No	G.—Large supply.
72	Bir Kansisrob ..	Large well	20 miles from Halaib	No	No	G.—Large supply. Sometimes filled in.
73	Halaib Wells .. ..	15 feet deep	Near Police Post	No	Yes	S.—Unfit for Europeans.
74	Bir Ungat .. ..	3 feet deep	100 miles from Alaqi	No	Yes	G.—30 camels.

## APPENDIX 4

## POSTAL INFORMATION

## 1. General

There are 4,529 urban and rural post offices in Egypt and one will be found in every village big enough to have a railway station. The larger offices are run on European lines and their services include :—

(a) Regular inland and foreign letter and parcel service—also air mails—with express letter service in the larger towns.

(b) C.O.D. parcel service, inland, and with Great Britain, Sudan and most European countries.

(c) Transmission of money order, inland and abroad, and postal orders, inland. British postal orders are available at the larger offices.

(d) Registration and insurance.

(e) Collection order service.

(f) A post office savings bank. Accounts can be transferred between Egypt and either Great Britain, Italy or the Sudan.

## 2. Inland Mails

Regular inland letter and parcel services are provided daily throughout the Nile Valley and Delta of the Nile and the canal zone. Outside this area, mails are less frequent. The following table shows the frequency and mode of conveyance of mail to outlying parts of the country :—

<i>To.</i>	<i>Frequency and Mode of Conveyance.</i>
Mersa Matruh ..	Daily by railway to Mersa Matruh.
Salum ..	By sea from Alexandria thrice monthly.
Siwa Oasis ..	Three times a month from Mersa Matruh by motor car.
Bahariya Oasis ..	By camel from Sandafa el Far every Tuesday (from Beni Mazar to Sandafa el Far daily by rural service). Mails for Farafra Oasis are forwarded here and addressees call to collect it.
Dakhla Oasis ..	By motor car from Kharga Oasis weekly.
Kharga Oasis ..	By railway twice weekly.

Hurghada..	..	By sea twice weekly from Port Tewfik and by any Government steamers calling there.	
Tor	..	By sea three times a month from Port Tewfik and by any Government steamer calling there.	
Abu Zeneima	..	By motor car from El Shatt every Thursday.	
Qosseir	..	By motor car from Qena every Thursday.	
Safaga	..	By motor car from Qosseir every Friday.	
Fanar Abu Darag Za'faran (Gulf of Suez Coast).	}	The mails are handed over to the Ports and Lights Administration at Port Tewfik and taken by sea in their ships.	
El Arish		..	Daily by railway.
Postal rates, inland and the Sudan, are 5 milliemes for every 30 grammes. Postcards charged at 3 mm.			

### 3. Foreign Mails

Mails to and from foreign countries are regular and abundant. Sailing programmes of the steamship companies vary and the following table only gives the average frequency of mails to the various foreign countries :—

Europe ..	..	..	..	Four or five times weekly to nearly all countries.
Turkey and Bulgaria (by rail <i>via</i> Palestine and Syria).	..	..	..	Four times a week.
Cyprus ..	..	..	..	Once a week, but there is an extra service from Cyprus <i>via</i> Palestine.
Iraq and Persia (by car from Jerusalem).	..	..	..	Twice a week.
Palestine and Syria (by rail)	..	..	..	Daily.
India, Iraq and Persia ..	..	..	..	Once or twice a week.
Ceylon ..	..	..	..	Twice a week.
Africa, north (except Tripoli), west and south, to England and then on.	..	..	..	Four or five times a week.
Tripoli ..	..	..	..	Once a fortnight.
Sudan ( <i>via</i> Nile Valley) ..	..	..	..	Twice a week.
East Africa, Somaliland and Abyssinia.	..	..	..	Once or twice a week.
Eritrea ..	..	..	..	Once a week.
Hedjaz ..	..	..	..	Once a week.
Belgian Congo ..	..	..	..	Twice a week.
America ..	..	..	..	Four or five times a week.
Australia, New Zealand and Oceania.	..	..	..	Once a week.

The postal authorities issue a monthly list showing the times of departure and expected time of arrival of mail to and from Egypt. This is invariably correct and is a good guide.

The rates charged are as follows :—

To any part of the British Empire.	15 mm. for the first 20 grammes. 13 mm. for every additional 20 grammes.
Other foreign countries . .	20 m/m for the first 20 grammes. 13 mm. for every additional 20 grammes.

Members of the British Forces and their families benefit from a postal concession which was granted by the Egyptian post office at the end of 1932. Instead of using Egyptian postage stamps, special stamps marked Army Post are sold by the NAAFI. The proceeds from the sale of these stamps are collected by the Command Paymaster, and paid to the Egyptian Postal Administration. These letters must be posted in military post-boxes. The concession applies only to letters from Egypt to Great Britain and Irish Free State by ordinary mails. On air mail letters, the full rates are paid, and Egyptian stamps must be used. A special army postage stamp value 3 mm. is sold at Christmas time and New Year for use in the despatch of cards of greeting. The envelope must not be stuck down.

#### 4. Air Mails

The following table shows the principal air mails leaving Egypt. All are carried by Imperial Airways unless otherwise stated :—

Alexandria-Athens-Brindisi-London . .	Three times a week.
Alexandria-Athens-Central Europe-Berlin (Athens-Berlin by a German Air Line).	Twice a week.
Cairo - Athens - Budapest - Leipzig - Amsterdam (Dutch Air Line KLM).	Twice a week.
Cairo-Iraq-Persian Gulf-India-Burma- Siam-Malaya-China-Japan.	Twice a week.
Alexandria - Athens - Istanbul (Athens - Istanbul by an Italian Air Line).	Once a week.
Cairo-Sudan-East Africa-Rhodesia-Union of South Africa (with branches to Belgian Congo and South-west Africa).	Twice a week.
Cairo - Iraq - Persian Gulf - India - Malay States - Singapore - Dutch East Indies (Dutch Air line KLM).	Twice a week.

The following charges are made on letters sent by air mail :—

	<i>First</i> 20 grammes.	<i>Each additional</i> 20 grammes.
Great Britain .. .. .	28 mm.	26 mm.
Other European countries ..	33 mm.	22 or 26 mm.
Iraq .. .. .	32 mm.	25 mm.
India (by air to Karachi) ..	45 mm.	38 mm.
India (internal air service) ..	55 mm.	53 mm.
South Africa .. .. .	80 mm.	78 mm.

Other countries are rated at varying rates according to distance, etc.

### 5. Telephone Service

Egypt has a good telephone service within the country and radio-telephone services to several European countries. Trunk line connect Egypt with Palestine, Sudan and Transjordan.

Local calls are charged at 5 mm. per call. Telephone calls are charged at, to Port Said 100 mm., to Suez 60 mm., to Ismailia 50 mm., to Faiyum 45 mm., to Luxor 200 mm., and to Aswan 250 mm. These rates are based on a 3-minute call, and are reduced by 20-25 per cent. after 1 p.m. and before 9 a.m. At night no further reduction is made, but a 6-minute call is allowed. The annual hire of a private telephone is £E.S., which entitles subscriber to 2,000 calls. Extra calls are charged at 3 mm each.

### 6. Telegrams and Cables

There are about 536 public telegraph offices in Egypt belonging to the E.S.T. and about half of them (including the larger offices) will deal with traffic in European languages as well as in Arabic. The Delta Light Railways have over 150 offices, which deal with inland telegrams only.

The charge for inland telegrams is 20 mm. for the first six words and 5 mm. for each additional word.

Cables to England and other European countries are best sent by the Eastern Telegraph Company. "Marconigrams" and "Eastern" cables are amalgamated. Cables are sent either ordinary or deferred. Ordinary cables are given priority over deferred cables, which are sent as traffic permits, usually within four hours.

"Marconigrams" to Great Britain are charged at 37 mm. per word and "Eastern" cables at 48 mm. Charges to other countries are proportionate. Deferred cables are charged at half the normal rates.

## APPENDIX V

## AERODROMES AND LANDING GROUNDS

The aerodromes and landing grounds of Egypt and Sinai are shown on Map No. 1. Full particulars of the above are contained in Air Publication 1438, Index of Aerodromes and Landing Grounds in Egypt, Sinai, etc. For easy reference, the following list shows all the aerodromes and landing shown therein :—

<i>Name of Landing Ground.</i>	<i>Egypt</i>	<i>Type.</i>
Aboukir (Inland)	.. ..	Occupied aerodrome.
"    (Coastal)	.. ..	.. ..
Abu Sueir..	.. ..	.. ..
Asyut (Mangabad)	.. ..	Petrol landing ground.
Assiut, East	.. ..	Civil landing ground.
Aswan	.. ..	Petrol landing ground.
Bahariya Oasis	.. ..	Emergency landing ground.
Bilbeis	.. ..	.. ..
Dakhla Oasis	.. ..	.. ..
Dekheila	.. ..	Civil airport.
Edfu	.. ..	Emergency landing ground.
El Rus (Wasta)	.. ..	.. ..
El Teiria	.. ..	.. ..
Farafra	.. ..	.. ..
Ghueba	.. ..	.. ..
Heliopolis (Town)	.. ..	Occupied aerodrome.
"    (Desert)	.. ..	.. ..
Helwan	.. ..	.. ..
Hurghada..	.. ..	Petrol landing ground.
Kharga	.. ..	Emergency landing ground.
Ismailia	.. ..	Occupied aerodrome.
Khatatba	.. ..	Petrol landing ground.
Luxor	.. ..	.. ..
Mersa Matruh	.. ..	Civil aerodrome.
Port Said (Port Fuad)	.. ..	Petrol landing ground.
Qara	.. ..	Emergency landing ground.
Samalut	.. ..	.. ..
Siwa Oasis	.. ..	.. ..
Sollum	.. ..	Petrol landing ground.
Suez Refinery	.. ..	Emergency landing ground.
Suez Road, No. 2	.. ..	.. ..
Suez Road, No. 3	.. ..	.. ..
Suez Road, No. 4	.. ..	.. ..
Suez	.. ..	Petrol landing ground.
Tel el Kebir	.. ..	Emergency landing ground.
Toshki Gharb	.. ..	.. ..
Wadi Natrum	.. ..	.. ..

<i>Name of Landing Ground.</i>				<i>Type.</i>		
				<i>Sinai</i>		
Abu Zeneima	..	..	..	Emergency landing ground.		
Bir Gattar	..	..	..	"	"	"
El Arish	..	..	..	Civil aerodrome.		
Hamma	..	..	..	Emergency landing ground.		
Jebelle	..	..	..	"	"	"
Jifjafa	..	..	..	"	"	"
Kafaf	..	..	..	"	"	"
Kilo 143 (9 miles west of El Arish on railway).				"	"	"
Little Bitter Lake	..	..	..	"	"	"
Mosefig	..	..	..	"	"	"
Nekhl	..	..	..	"	"	"
Qantara	..	..	..	"	"	"
Rigum	..	..	..	"	"	"
Romani	..	..	..	"	"	"
Tor	..	..	..	"	"	"
Um Shihan	..	..	..	"	"	"

#### Unlisted Aerodromes and Landing Grounds

The following are not yet included in Air Publications 1438, Index of Aerodromes and Landing Grounds in Egypt, Sinai, etc. :—

<i>Name of Landing Ground.</i>				<i>Type.</i>		
Minya	..	..	..	Emergency landing ground.		
Port Said (West) (6 miles west of town on the coast).				Civil aerodrome.		

#### APPENDIX VI

TREATY OF ALLIANCE BETWEEN HIS MAJESTY, IN RESPECT OF  
THE UNITED KINGDOM, AND HIS MAJESTY THE KING OF  
EGYPT.

*London, 26th August, 1936*

*(Ratifications exchanged at Cairo on 22nd December, 1936.)*

His Majesty the King of Great Britain, Ireland and the British Dominions beyond the Seas, Emperor of India, and His Majesty the King of Egypt ;

Being anxious to consolidate the friendship and the relations of good understanding between them and to co-operate in the execution of their international obligations in preserving the peace of the world ;

And considering that these objects will best be achieved by the conclusion of a treaty of friendship and alliance, which in their common interest will provide for effective co-operation in preserving peace and ensuring the defence of their respective territories, and shall govern their mutual relations in the future ;

Have agreed to conclude a treaty for this purpose, and have appointed their plenipotentiaries.

Who, having communicated their full powers, found in good and due form, have agreed as follows :—

#### ARTICLE 1

The military occupation of Egypt by the forces of His Majesty the King and Emperor is terminated.

#### ARTICLE 2

His Majesty the King and Emperor will henceforth be represented at the Court of His Majesty the King of Egypt and His Majesty the King of Egypt will be represented at the Court of St. James's by Ambassadors duly accredited.

#### ARTICLE 3

Egypt intends to apply for membership to the League of Nations. His Majesty's Government in the United Kingdom, recognising Egypt as a sovereign independent State, will support any request for admission which the Egyptian Government may present in the conditions prescribed by Article 1 of the Covenant.

#### ARTICLE 4

An alliance is established between the High Contracting Parties with a view to consolidating their friendship, their cordial understanding and their good relations.

#### ARTICLE 5

Each of the High Contracting Parties undertakes not to adopt in relation to foreign countries an attitude which is inconsistent with the alliance, nor to conclude political treaties inconsistent with the provisions of the present treaty.

#### ARTICLE 6

Should any dispute with a third State produce a situation which involves a risk of a rupture with that State, the High Contracting Parties will consult each other with a view to the settlement of the said dispute by peaceful means, in accordance with the provisions of the Covenant of the League of Nations and of any other international obligations which may be applicable to the case.

#### ARTICLE 7

Should, notwithstanding the provisions of Article 6 above, either of the High Contracting Parties become engaged in war, the other High Contracting Party will, subject always to the provisions of Article 10 below, immediately come to his aid in the capacity of an ally.

The aid of His Majesty the King of Egypt in the event of war, imminent menace of war or apprehended international emergency will consist in furnishing to His Majesty the King and Emperor on Egyptian territory, in accordance with the Egyptian system of administration and legislation, all the facilities and assistance in his power, including the use of his ports, aerodromes and means of communication. It will accordingly be for the Egyptian Government to take all the administrative and legislative measures, including the establishment of martial law and an effective censorship, necessary to render these facilities and assistance effective.

#### ARTICLE 8

In view of the fact that the Suez Canal, whilst being an integral part of Egypt, is a universal means of communication as also an essential means of communication between the different parts of the British Empire, His Majesty the King of Egypt, until such time as the High Contracting Parties agree that the Egyptian Army is in a position to ensure by its own resources the liberty and entire security of navigation of the Canal, authorizes His Majesty the King and Emperor to station forces in Egyptian territory in the vicinity of the Canal, in the zone specified in the Annex to this Article, with a view to ensuring in co-operation with the Egyptian forces the defence of the Canal. The detailed arrangements for the carrying into effect of this article are contained in the Annex thereto. The presence of these forces shall not constitute in any manner an occupation and will in no way prejudice the sovereign rights of Egypt.

It is understood that at the end of the period of 20 years specified in Article 16 the question whether the presence of British forces is no longer necessary owing to the fact that the Egyptian Army is in a position to ensure by its own resources the liberty and entire security of navigation of the Canal may, if the High Contracting Parties do not agree thereon, be submitted to the Council of the League of Nations for decision in accordance with the provisions of the Covenant in force at the time of signature of the present treaty or to such other person or body of persons for decision in accordance with such other procedure as the High Contracting Parties may agree.

#### *Annex to Article 8*

1. Without prejudice to the provisions of Article 7, the numbers of the forces of His Majesty the King and Emperor to be maintained in the vicinity of the Canal shall not exceed, of the land forces, 10,000, and of the air forces, 400 pilots, together with the necessary ancillary personnel for administrative and technical duties. These numbers do not include civilian personnel, e.g., clerks, artisans, and labourers.

2. The British forces to be maintained in the vicinity of the Canal will be distributed (a) as regards the land forces, in Moascar and the Geneifa area on the south-west side of the Great Bitter Lake, and (b) as regards the air forces, within 5 miles of the

Port Said-Suez railway from Kantara in the north, to the junction of the railway Suez-Cairo and Suez-Ismailia in the south, together with an extension along the Ismailia-Cairo railway to include the Royal Air Force Station at Abu Sueir and its satellite landing grounds; together with areas suitable for air firing and bombing ranges, which may have to be placed east of the Canal.

3. In the localities specified above there shall be provided for the British land and air forces of the numbers specified in para. 1 above, including 4,000 civilian personnel (but less 2,000 of the land forces, 700 of the air forces and 450 civilian personnel for whom accommodation already exists), the necessary lands and durable barrack and technical accommodation, including an emergency water supply. The lands, accommodation and water supply shall be suitable according to modern standards. In addition, amenities such as are reasonable, having regard to the character of these localities, will be provided by the planting of trees and the provision of gardens, playing fields, etc., for the troops, and a site for the erection of a convalescent camp on the Mediterranean coast.

4. The Egyptian Government will make available the lands and construct the accommodation, water supplies, amenities and convalescent camp, referred to in the preceding paragraph as being necessary over and above the accommodation already existing in these localities, at its own expense, but His Majesty's Government in the United Kingdom will contribute (1) the actual sum spent by the Egyptian Government before 1914 on the construction of new barracks as alternative accommodation to the Kasr-el-Nil Barracks in Cairo, and (2) the cost of one-fourth of the barrack and technical accommodation for the land forces. The first of these sums shall be paid at the time specified in para. 8 below for the withdrawal of the British forces from Cairo and the second at the time for the withdrawal of the British forces from Alexandria under para. 18 below. The Egyptian Government may charge a fair rental for the residential accommodation provided for the civilian personnel. The amount of the rent will be agreed between His Majesty's Government in the United Kingdom and the Egyptian Government.

5. The two Governments will each appoint, immediately the present treaty comes into force, two or more persons who shall together form a committee to whom all questions relating to the execution of these works from the time of their commencement to the time of their completion shall be entrusted. Proposals for, or outlines of, plans and specifications put forward by the representatives of His Majesty's Government in the United Kingdom will be accepted, provided they are reasonable and do not fall outside the scope of the obligations of the Egyptian Government under para. 4. The plans and specifications of each of the works to be undertaken by the Egyptian Government shall be approved by the representatives of both Governments on this committee before the work is begun. Any member of this

committee, as well as the Commanders of the British forces or their representatives, shall have the right to examine the works at all stages of their construction, and the United Kingdom members of the committee may make suggestions as regards the manner in which the work is carried out. The United Kingdom members shall also have the right to make at any time, while the work is in progress, proposals for modifications or alterations in the plans and specifications. Effect shall be given to suggestions and proposals by the United Kingdom members, subject to the condition that they are reasonable and do not fall outside the scope of the obligations of the Egyptian Government under para. 4. In the case of machinery and other stores, where standardization of type is important, it is agreed that stores of the standard type in general use by the British forces will be obtained and installed. It is, of course, understood that His Majesty's Government in the United Kingdom may, when the barracks and accommodation are being used by the British forces, make at their own expense improvements or alterations thereto and construct new buildings in the areas specified in para. 2 above.

6. In pursuance of their programme for the development of road and railway communications in Egypt, and in order to bring the means of communications in Egypt up to modern strategic requirements, the Egyptian Government will construct and maintain the following roads, bridges and railways :—

(A)—*Roads*

(i) Ismailia—Alexandria, via Tel-el-Kebir, Zagazig, Zifta, Tanta, Kafr-el-Zayat, Damanhour.

(ii) Ismailia—Cairo, via Tel-el-Kebir and thence continuing along the Sweet Water Canal to Heliopolis.

(iii) Port Said—Ismailia—Suez.

(iv) A link between the south end of the Great Bitter Lake and the Cairo—Suez road about 15 miles west of Suez.

In order to bring them up to the general standard of good-class roads for general traffic, these roads will be 20 ft. wide, have bye-passes round villages, etc., and be made of such material as to be permanently utilisable for military purposes, and will be constructed in the above order of importance. They will comply with the technical specifications set out below which are the ordinary specifications for a good-class road for general traffic.

Bridges and roads shall be capable of carrying a double line of continuous columns of either heavy four-wheeled mechanical transport, six-wheeled mechanical transport or medium tanks. With regard to four-wheeled vehicles, the distance between the front axle of one vehicle and the rear axle of the vehicle next ahead shall be calculated at 20 ft., the load on each rear axle to be 14 tons, on each front axle to be 6 tons and the distance between axles 18 ft. With regard to six-wheeled vehicles, the distance between the front axle of one vehicle and the rear axle

of that next ahead shall be calculated to be 20 ft., between rear axle and middle axle to be 4 ft. and between middle axle and front axle 13 ft.; the load on each rear and middle axle to be 8.1 tons and on each front axle to be 4 tons. Tanks shall be calculated for as weighing 19.25 tons, to be 25 ft. over all in length and to have a distance of 3 ft. between the front of one tank and the rear of the next ahead; the load of 19.25 tons to be carried by tracks which have a bearing of 13 ft. upon the road or bridge.

(B)—*Railways*

(i)\* Railway facilities in the Canal Zone will be increased and improved to meet the needs of the increased garrison in the zone and to provide facilities for rapid entrainment of personnel, guns, vehicles and stores according to the requirements of a modern army. His Majesty's Government in the United Kingdom are hereby authorised to make at their own expense such subsequent additions and modifications to these railway facilities as the future requirements of the British forces may demand. Where such additions or modifications affect railway lines used for general traffic, the permission of the Egyptian Government must be obtained.

(ii) The line between Zagazig and Tanta will be doubled.

(iii) The Alexandria—Mersa Matruh line will be improved and made permanent.

7. In addition to the roads specified in para. 6 (A) above, and for the same purposes, the Egyptian Government will construct and maintain the following roads:—

- (i) Cairo south along the Nile to Kena and Kus;
- (ii) Kus to Kosseir;
- (iii) Qena to Hurghada.

These roads and the bridges thereon will be constructed to satisfy the same standards as those specified in para. 6 above.

It may not be possible for the construction of the roads referred to in this para. to be undertaken at the same time as the roads referred to in para. 6, but they will be constructed as soon as possible.

8. When, to the satisfaction of both the High Contracting Parties, the accommodation referred to in para. 4 is ready (accommodation for the forces retained temporarily at Alexandria in accordance with para. 18 below not being included) and the works referred to in para. 6 above (other than the railways referred to in (ii) and (iii) of part (B) of that para.) have been completed, then the British forces in parts of Egypt other than the areas in the Canal Zone specified in para. 2 above and except for those maintained temporarily at Alexandria, will withdraw and the lands, barracks, aircraft landing grounds, seaplane anchorages

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\*See note No. 1 on page 446.

and accommodation occupied by them will be vacated and, save in so far as they may belong to private persons, be handed over to the Egyptian Government.

9. Any difference of opinion between the two Governments relating to the execution of paras. 3, 4, 5, 6, 7 and 8 above will be submitted to the decision of an Arbitral Board, composed of three members, the two Governments nominating each a member and the third being nominated by the two Governments in common agreement. The decision of the Board shall be final.

10. In order to ensure the proper training of British troops, it is agreed that the area defined below will be available for the training of British forces : (a) and (b) at all times of the year, and (c) during February and March for annual manœuvres :—

(a) West of the Canal : From Kantara in the north to the Suez-Cairo railway (inclusive) in the south and as far as Long.  $31^{\circ} 30' E.$ , exclusive of all cultivation ;

(b) East of the Canal as required ;

(c) A continuation of (a) as far south as Lat.  $29^{\circ} 52' N.$ , thence south-east to the junction of Lat.  $29^{\circ} 30' N.$ , and Long.  $31^{\circ} 44' E.$ , and from that point eastwards along Lat.  $29^{\circ} 30' N.$

The areas of the localities referred to above are included in the map (scale 1 : 500,000) which is annexed to the present Treaty.\*

11. Unless the two Governments agree to the contrary, the Egyptian Government will prohibit the passage of aircraft over the territories situated on either side of the Suez Canal and within 20 km. of it, except for the purpose of passage from east to west or vice versa by means of a corridor 10 km. wide at Kantara. This prohibition will not, however, apply to the forces of the High Contracting Parties or to genuinely Egyptian air organizations or to air organizations genuinely belonging to any part of the British Commonwealth of Nations operating under the authority of the Egyptian Government.

12. The Egyptian Government will provide when necessary reasonable means of communication and access to and from the localities where the British forces are situated and will also accord facilities at Port Said and Suez for the landing and storage of material and supplies for the British forces, including the maintenance of a small detachment of the British forces in these ports to handle and guard this material and these supplies in transit.

13. In view of the fact that the speed and range of modern aircraft necessitate the use of wide areas for the efficient training of air forces, the Egyptian Government will accord permission to the British air forces to fly wherever they consider it necessary for the purpose of training. Reciprocal treatment will be accorded to Egyptian air forces in British territories.

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\* A map (scale 1 : 1,000,000) to illustrate the Treaty is annexed.

14. In view of the fact that the safety of flying is dependent upon provision of a large number of places where aircraft can alight, the Egyptian Government will secure the maintenance and constant availability of adequate landing grounds and seaplane anchorages in Egyptian territory and waters. The Egyptian Government will accede to any request from the British air forces for such additional landing grounds and seaplane anchorages as experience may show to be necessary to make the number adequate for allied requirements.

15. The Egyptian Government will accord permission for the British air forces to use the said landing grounds and seaplane anchorages, and in the case of certain of them to send stocks of fuel and stores thereto, to be kept in sheds to be erected thereon for this purpose, and in case of urgency to undertake such work as may be necessary for the safety of aircraft.

16. The Egyptian Government will give all necessary facilities for the passage of the personnel of the British forces, aircraft and stores to and from the said landing grounds and seaplane anchorages. Similar facilities will be afforded to the personnel aircraft and stores of the Egyptian forces at the air bases of the British forces.

17. The British military authorities shall be at liberty to request permission from the Egyptian Government to send parties of officers in civilian clothes to the Western Desert to study the ground and draw up tactical schemes. This permission shall not be unreasonably withheld.

18. His Majesty the King of Egypt authorises His Majesty the King and Emperor to maintain units of his forces at or near Alexandria for a period not exceeding eight years from the date of the coming into force of the present treaty, this being the approximate period considered necessary by the two High Contracting Parties—

(a) For the final completion of the barrack accommodation in the canal zone ;

(b)\* For the improvement of the roads—

- (i) Cairo-Suez ;
- (ii) Cairo-Alexandria via Giza and the desert ;
- (iii) Alexandria-Mersa Matruh ;

so as to bring them up to the standard specified in part (A) of para. 6 ;

(c) The improvement of the railway facilities between Ismailia and Alexandria, and Alexandria and Mersa Matruh referred to in (ii) and (iii) of part (B) of para. 6.

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\* See note No. 2 on page 447.

The Egyptian Government will complete the work specified in (a) (b) and (c) above before the expiry of the period of eight years aforesaid. The roads and railway facilities mentioned above will, of course, be maintained by the Egyptian Government.

19. The British forces in or near Cairo shall, until the time for withdrawal under para. 8 above, and the British forces in or near Alexandria until the expiry of the time specified in para. 18 above, continue to enjoy the same facilities as at present.

#### ARTICLE 9

The immunities and privileges in jurisdictional and fiscal matters to be enjoyed by the forces of His Majesty the King and Emperor who are in Egypt in accordance with the provisions of the present treaty will be determined in a separate convention\* to be concluded between the Egyptian Government and His Majesty's Government in the United Kingdom.

#### ARTICLE 10

Nothing in the present treaty is intended to or shall in any way prejudice the rights and obligations which devolve, or may devolve, upon either of the High Contracting Parties under the Covenant of the League of Nations or the Treaty for the Renunciation of War signed at Paris on the 27th August, 1928.†

#### ARTICLE 11

1. While reserving liberty to conclude new conventions in future, modifying the agreements of the 19th January and the 10th July, 1899, the High Contracting Parties agree that the administration of the Sudan shall continue to be that resulting from the said agreements. The Governor-General shall continue to exercise on the joint behalf of the High Contracting Parties the powers conferred upon him by the said agreements.

The High Contracting Parties agree that the primary aim of their administration in the Sudan must be the welfare of the Sudanese.

Nothing in this article prejudices the question of sovereignty over the Sudan.

2.‡ Appointments and promotions of officials in the Sudan will in consequence remain vested in the Governor-General, who, in making new appointments to posts for which qualified Sudanese are not available, will select suitable candidates of British and Egyptian nationality.

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\* For convention see page 448.

† Treaty Series No. 29 (1929) (Cmd. 3410).

‡ See note No. 3 on page 447.

3. In addition to Sudanese troops, both British and Egyptian troops shall be placed at the disposal of the Governor-General for the defence of the Sudan.

4. Egyptian immigration into the Sudan shall be unrestricted except for reasons of public order and health.

5. There shall be no discrimination in the Sudan between British subjects and Egyptian nationals in matters of commerce, immigration or the possession of property.

6. The High Contracting Parties are agreed on the provisions set out in the Annex to this Article as regards the method by which international conventions are to be made applicable to the Sudan.

*Annex to Article 11*

1. Unless and until the High Contracting Parties agree to the contrary in application of para. 1 of this Article, the general principle for the future shall be that international conventions shall only become applicable to the Sudan by the joint action of the Governments of the United Kingdom and of Egypt, and that such joint action shall similarly also be required if it is desired to terminate the participation of the Sudan in an international convention which already applies to this territory.

2. Conventions to which it will be desired that the Sudan should be a party will generally be conventions of a technical or humanitarian character. Such conventions almost invariably contain a provision for subsequent accession, and in such cases this method of making the convention applicable to the Sudan will be adopted. Accession will be effected by a joint instrument, signed on behalf of Egypt and the United Kingdom respectively by two persons duly authorized for the purpose. The method of depositing the instruments of accession will be the subject of agreement in each case between the two Governments. In the event of its being desired to apply to the Sudan a convention which does not contain an accession clause, the method by which this should be effected will be the subject of consultation and agreement between the two Governments.

3. If the Sudan is already a party to a convention, and it is desired to terminate the participation of the Sudan therein, the necessary notice of termination will be given jointly by the United Kingdom and by Egypt.

4. It is understood that the participation of the Sudan in a convention and the termination of such participation can only be effected by joint action specifically taken in respect of the Sudan, and does not follow merely from the fact that the United Kingdom and Egypt are both parties to a convention or have both denounced a convention.

5. At international conferences where such conventions are negotiated, the Egyptian and the United Kingdom delegates would naturally keep in touch with a view to any action which they may agree to be desirable in the interests of the Sudan.

## ARTICLE 12

His Majesty the King and Emperor recognizes that the responsibility for the lives and property of foreigners in Egypt devolves exclusively upon the Egyptian Government, who will ensure the fulfilment of their obligations in this respect.

## ARTICLE 13

His Majesty the King and Emperor recognizes that the capitulatory regime now existing in Egypt is no longer in accordance with the spirit of the times and with the present state of Egypt.

His Majesty the King of Egypt desires the abolition of this regime without delay.

Both High Contracting Parties are agreed upon the arrangements with regard to this matter as set forth in the Annex to this Article.

*Annex to Article 13*

1. It is the object of the arrangements set out in this Annex—

(i) To bring about speedily the abolition of the Capitulations in Egypt with the disappearance of the existing restrictions on Egyptian sovereignty in the matter of the application of Egyptian legislation (including financial legislation) to foreigners as its necessary consequence ;

(ii) To institute a transitional regime for a reasonable and not unduly prolonged period to be fixed, during which the Mixed Tribunals will remain and will, in addition to their present judicial jurisdiction, exercise the jurisdiction at present vested in the Consular Courts.

At the end of this transitional period the Egyptian Government will be free to dispense with the Mixed Tribunals.

2. As a first step, the Egyptian Government will approach the Capitulatory Powers as soon as possible with a view to (a) the removal of all restrictions on the application of Egyptian legislation to foreigners, and (b) the institution of a transitional regime for the Mixed Tribunals as provided in para. 1 (ii) above.

3. His Majesty's Government in the United Kingdom, as the Government of a Capitulatory Power and as an ally of Egypt, are in no way opposed to the arrangements referred to in the preceding paragraph and will collaborate actively with the Egyptian Government in giving effect to them by using all their influence with the Powers exercising capitulatory rights in Egypt.

4. It is understood that in the event of its being found impossible to bring into effect the arrangements referred to in para. 2, the Egyptian Government retains its full rights unimpaired with regard to the capitulatory regime, including the Mixed Tribunals.

5. It is understood that para. 2 (a) involves not merely that the assent of the Capitulatory Powers will be no longer necessary for the application of any Egyptian legislation to their nationals, but also that the present legislative functions of the Mixed Tribunals as regards the application of Egyptian legislation to foreigners will terminate. It would follow from this that the Mixed Tribunals in their judicial capacity would no longer have to pronounce upon the validity of the application to foreigners of an Egyptian law or decree which has been applied to foreigners by the Egyptian Parliament or Government, as the case may be.

6. His Majesty the King of Egypt hereby declares that no Egyptian legislation made applicable to foreigners will be inconsistent with the principles generally adopted in modern legislation or, with particular relation to legislation of a fiscal nature, discriminate against foreigners, including foreign corporate bodies.

7. In view of the fact that it is the practice in most countries to apply to foreigners the law of their nationality in matters of "statut personnel," consideration will be given to the desirability of excepting from the transfer of jurisdiction, at any rate in the first place, matters relating to "statut personnel" affecting nationals of those Capitulatory Powers who wish that their Consular authorities should continue to exercise such jurisdiction.

8. The transitional regime for the Mixed Tribunals and the transfer to them of the jurisdiction at present exercised by the Consular Courts (which regime and transfer will, of course, be subject to the provisions of the special convention referred to in Article 9) will necessitate the revision of the existing laws relating to the organization and jurisdiction of the Mixed Tribunals, including the preparation and promulgation of a new Code of Criminal Procedure. It is understood that this revision will include amongst other matters :—

(i) The definition of the word "foreigner" for the purpose of the future jurisdiction of the Mixed Tribunals ;

(ii) The increase of the personnel of the Mixed Tribunals and the Mixed Parquet, which will be necessitated by the proposed extension of their jurisdiction ;

(iii) The procedure in the case of pardons or remissions of sentences imposed on foreigners and also in connection with the execution of capital sentences passed on foreigners.

#### ARTICLE 14

The present treaty abrogates any existing agreements or other instruments whose continued existence is inconsistent with its provisions. Should either High Contracting Party so request, a list of the agreements and instruments thus abrogated shall be drawn up in agreement between them within 6 months of the coming into force of the present treaty.

## ARTICLE 15

The High Contracting Parties agree that any difference on the subject of the application or interpretation of the provisions of the present treaty which they are unable to settle by direct negotiation shall be dealt with in accordance with the provisions of the Covenant of the League of Nations.

## ARTICLE 16

At any time after the expiration of a period of 20 years from the coming into force of the treaty, the High Contracting Parties will, at the request of either of them, enter into negotiations with a view to such revision of its terms by agreement between them as may be appropriate in the circumstances as they then exist. In case of the High Contracting Parties being unable to agree upon the terms of the revised treaty, the difference will be submitted to the Council of the League of Nations for decision in accordance with the provisions of the Covenant in force at the time of signature of the present treaty or to such other person or body of persons for decision in accordance with such procedure as the High Contracting Parties may agree. It is agreed that any revision of this treaty will provide for the continuation of the Alliance between the High Contracting Parties in accordance with the principles contained in Articles 4, 5, 6 and 7. Nevertheless, with the consent of both High Contracting Parties, negotiations may be entered into at any time after the expiration of a period of 10 years after the coming into force of the treaty, with a view to such revision as aforesaid.

## ARTICLE 17

The present treaty is subject to ratification. Ratifications shall be exchanged in Cairo as soon as possible. The treaty shall come into force on the date of the exchange of ratifications, and shall thereupon be registered with the Secretary-General of the League of Nations.

## AGREED MINUTE

The United Kingdom and Egyptian Delegations desire at the moment of signature to record in a minute certain points of interpretation of the provisions of the Treaty of Alliance upon which they are agreed.

These points are as follows :—

(i) It is of course understood that the facilities provided for in Article 7 to be furnished to His Majesty the King and Emperor include the sending of British forces or reinforcements in the eventualities specified in that Article.

(ii) With reference to Article 7, it is understood that as a result of the provisions of Article 6, there will have been mutual consultation between the two Governments in the case of a risk of a rupture. In the case of an apprehended international emergency, the same principle of mutual consultation applies.

(iii) The " means of communication " referred to in the second sentence of Article 7 include telecommunications (cables, telegraphs, telephones and wireless).

(iv) Amongst the military, administrative and legislative measures referred to in the third sentence of Article 7 are included measures under which the Egyptian Government, in the exercise of their powers as regards radio-electric communications, will take into account the requirements of the W/T stations of the British forces in Egypt, and will continue to co-operate with the British authorities to prevent any mutual interference between British and Egyptian W/T stations, and measures providing for the effective control of all means of communications referred to in that Article.

(v) The words " Geneifa area " in para. 2 (a) of the Annex to Article 8 mean: along the shore of the Great Bitter Lake from a point 3 km. north of Geneifa station to a point 3 km. south-east of Fayid station to a depth of 3 km. from the shore of the lake.

(vi) With reference to para. 2 (b) of the Annex to Article 8, it is understood that the exact sites in the area therein referred to where the air forces will be located will be defined as soon as possible.

The Royal Air Force dépôt at present situated at Aboukir will also be transferred to this area not later than the date of the withdrawal of the British forces from Cairo under para. 8.

(vii) With reference to para. 3 of the Annex to Article 8, it is understood (a) that British barrack accommodation includes married quarters for officers and for a proportion of the other ranks, (b) that though the site of the convalescent camp cannot be definitely fixed at the moment, El Arish might possibly prove suitable, and (c) that the Egyptian Government, in pursuance of the policy which it has already taken in hand for the benefit of the inhabitants of those areas, will take all reasonable sanitary measures for the combating of malaria in the areas adjacent to those where the British forces are situated.

(viii) With reference to para. 6 of the Annex to Article 8, it is understood that, with regard to road No. (iii), the Egyptian Government will, unless they are able to make arrangements with the Suez Canal Company for the use of this road by the British and Egyptian forces and for the improvement of those sections which are not already up to this standard so as to satisfy the conditions laid down in para. 6, construct an entirely new road connecting these places.

(ix) With reference to para. 12 of the Annex to Article 8, it is understood that the number of the detachment referred to shall be limited to the minimum strictly necessary to handle and guard this material.

(x) With reference to para. 13 of the Annex to Article 8, it is understood that flying will take place for training purposes mostly over desert areas, and that populated areas will only be flown over where necessity so demands.

(xi) With reference to para. 2 of the Egyptian Note relating to military matters, it is of course understood that the cost of the Military Mission will be defrayed by the Egyptian Government, and that the words "proper training" in this paragraph include training in British military colleges and academies.

(xii) Para. 2 of the Egyptian Note relating to military matters only applies to persons who are already at the time members of the Egyptian armed forces.

(xiii) The word "equipment" in para. 3 of the Egyptian Note relating to military matters, means all such stores as it is desirable for forces acting together to have as a common pattern. It does not include articles of clothing or articles of local production.

(xiv) With reference to para. 1 of Article 11, it is agreed that the Governor-General shall furnish to His Majesty's Government in the United Kingdom and the Egyptian Government an annual report on the administration of the Sudan. Sudan legislation will be notified directly to the President of the Egyptian Council of Ministers.

(xv) With reference to para. 2 of Article 11, it is understood that, while the appointment of Egyptian nationals to official posts in the Sudan must necessarily be governed by the number of suitable vacancies, the time of their occurrence and the qualifications of the candidates forthcoming, the provisions of this paragraph will take effect forthwith on the coming into force of the Treaty. The promotion and advancement of members of the Sudan service shall be irrespective of nationality up to any rank by selection in accordance with individual merits.

It is also understood that these provisions will not prevent the Governor-General occasionally appointing to special posts persons of another nationality when no qualified British subjects, Egyptian nationals or Sudanese are available.

(xvi) With reference to para. 3 of Article 11, it is understood that, as the Egyptian Government are willing to send troops to the Sudan, the Governor-General will give immediate consideration to the question of the number of Egyptian troops required for service in the Sudan, the precise places where they will be stationed and the accommodation necessary for them, and that the Egyptian Government will send forthwith, on the coming into force of the Treaty, an Egyptian military officer of high rank whom the Governor-General can consult with regard to these matters.

(xvii) With reference to Article 11, as it has been arranged between the Egyptian Government and His Majesty's Government in the United Kingdom that the question of the indebtedness of the Sudan to Egypt and other financial questions affecting the Sudan shall be discussed between the Egyptian Ministry of Finance and the Treasury of the United Kingdom, and as such discussions have already commenced, it has been considered unnecessary to insert in the Treaty any provision in regard to this question.

(xviii) With regard to para. 6 of the Annex to Article 13, it is understood that questions relating to this declaration are not subjects for the appreciation of any Courts in Egypt.

Signed in duplicate at London this 26th day of August, 1936.

ANTHONY EDEN,

*His Majesty's Principal Secretary of  
State for Foreign Affairs.*

MOUSTAPHA EL-NAHAS,

*President of the Egyptian Council of  
Ministers.*

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NOTES.—LONDON, 26TH AUGUST, 1936

No. 1

*Moustapha El-Nahas Pacha to Mr. Eden*

*London, 26 August, 1936.*

Sir,

With reference to Article 2 of the treaty signed this day, I have the honour to inform Your Excellency that, as His Majesty the King of Great Britain, Ireland and the British Dominions beyond the Seas, Emperor of India, will be the first foreign sovereign to be represented in Egypt by an Ambassador, British Ambassadors will be considered senior to the other diplomatic representatives accredited to the Court of His Majesty the King of Egypt.

The provisions of this note are subject to revision at the time and in the conditions provided for in Article 16 of the treaty.

I avail, etc.,

MOUSTAPHA EL-NAHAS,

*President of the Council of Ministers.*

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No. 2

*Moustapha El-Nahas Pacha to Mr. Eden**London, 26 August, 1936.*

Sir,

With reference to Article 12 of the treaty signed this day, I have the honour to inform Your Excellency that the Egyptian Government intend to abolish forthwith the European Bureau of the Public Security Department, but will retain, for five years from the coming into force of the treaty, a certain European element in their city police. The said police will remain for the same period under the command of British officers.

With a view to facilitating the gradual substitution of Egyptian officials for the said European element and thereby securing the harmonious working of the police organization, the Egyptian Government propose to dispense annually with the services of one-fifth of the number of European police officials.

The Egyptian Government, in view of the treaty of friendship and alliance signed to-day, will, when engaging the services of foreign experts, generally prefer British subjects possessing the necessary qualifications.

I avail, etc.,

MOUSTAPHA EL-NAHAS,

*President of the Council of Ministers.*

No. 3

*Moustapha El-Nahas Pacha to Mr. Eden**London, 26th August, 1936.*

Sir,

I wish to place on record certain further understandings in regard to military matters which have been reached between us in connection with the Treaty of Alliance signed this day.

(1) British personnel shall be withdrawn from the Egyptian Army and the functions of the Inspector-General and his staff shall terminate.

(2) The Egyptian Government, desiring to perfect the training of the Egyptian Army, including the Air Force, and intending, in the interests of the alliance which has been established, that such foreign instructors as they may deem necessary shall be chosen from amongst British subjects only, will avail themselves of the advice of a British Military Mission for such time as they may deem necessary for the purposes aforesaid. His Majesty's Government in the United Kingdom will furnish the Military Mission which the Egyptian Government desire, and will also undertake to

receive and provide proper training in the United Kingdom for any personnel of the Egyptian forces which the Egyptian Government may desire to send for the purpose of being trained. In the circumstances created by this treaty the Egyptian Government will naturally not desire to send any personnel of their armed forces to undergo a course in any training establishment or unit abroad elsewhere than in the United Kingdom, provided that this shall not prevent it from sending to any other country such personnel as cannot be received in training establishments and units in the United Kingdom.

(3) In the interests of the Alliance, and in view of the possible necessity of co-operative action between the British and Egyptian forces, the armament and equipment, land and air, of the Egyptian forces shall not differ in type from those of the British forces. His Majesty's Government in the United Kingdom undertake to use their good offices to facilitate the supply of such armament and equipment from the United Kingdom, at prices similar to those which would be paid by His Majesty's Government, whenever the Egyptian Government so desire.

I avail, etc.,

MOUSTAPHA EL-NAHAS,

*President of the Council of Ministers.*

# NOTES EXCHANGED IN EGYPT.—12TH AUGUST, 1936

## No. 1

*Sir Miles Lampson to Moustapha El-Nahas Pacha*

*The Residency, Ramleh,*

*12th August, 1936.*

Sir,

With reference to para. 6 (B) (i) of the Annex to Article H (9),\* Your Excellency asked me on behalf of the Egyptian Delegation to communicate information as regards the work which would be required to be done under this paragraph. I have the honour to enclose a statement which gives these details so far as they can be stated at the present moment. This statement is, however, only approximate and further details might have to be added to it.

I avail, etc.,

MILES W. LAMPSON,

*High Commissioner.*

\* Article 8 in the Treaty as signed.

## Enclosure No. 1

*Approximate Railway Requirements in Canal Zone**Moascar.*

The existing siding with troop entrainment platform and one siding with end loading ramp, each to hold "60" unit trains, with facilities to enable a train to be despatched every 3 hours, will be maintained.

*Geneifa Area*

(a) *Entrainment Station.*—Two sidings with loop entrainment platforms and two sidings with end loading ramps, each to hold "60" unit trains.

(b) *Depôt Area*, facilities as given below together with the necessary shunting loops, etc. :—

Supply Depôt : One spur with two loading sidings (each 20 units).

Petrol Depôt : One loading siding (10 units).

M.T. Vehicle Reception Depôt : One end loading siding (30 Flats).

Ordnance Depôt : One spur with one loading and one end loading siding (each 20 units).

Camp Equipment Depôt : One loading siding (40 units).

Ammunition Depôt : One spur with two loading sidings (each 20 units).

Hospital Area : One siding and one off-loading platform for one Hospital train.

R.E. Stores Depôt : One loading siding (20 units).

N.A.A.F.I. Depôt : One loading siding (10 units).

(c) *Marshalling and Locomotive Yards* to enable one personnel train, or one M.T. train, being despatched every three hours throughout the twenty-four.

(d) *Wharves and other unloading facilities* as required.

*Note.*—All loading sidings to have platforms corresponding with the length of the train.

## No. 2

*Moustapha El-Nahas Pacha to Sir Miles Lampson*

*Antoniades Palace, Alexandria,*

*12th August, 1936.*

Sir,

With reference to para. 18 (b) of the draft Annex to Article H (9)\* initialled the 24th July last, I have the honour to inform Your Excellency that the work which is at present being done on the roads Cairo-Alexandria, *via* Giza and the desert, and Cairo-Suez will be pushed forward and will be completed by the end of 1936.

I avail, etc.,

MOUSTAPHA EL-NAHAS,

*President of the Council of Ministers.*

## No. 3

*Sir Miles Lampson to Moustapha El-Nahas Pacha*

*The Residency, Ramleh,*

*12th August, 1936.*

Sir,

In the course of discussions on questions of detail, arising out of para. 2 of Article K,† the suggestion for the secondment of an Egyptian economic expert for service at Khartum, and the Governor-General's wish to appoint an Egyptian officer to his personal staff as military secretary, were noted and considered acceptable in principle. It was also considered desirable and acceptable that the Inspector-General of the Egyptian Irrigation Service in the Sudan should be invited to attend the Governor-General's Council when matters relating to his departmental interests were before the Council.

I avail, etc.,

MILES W. LAMPSON,

*High Commissioner.*

\* Article 8 in the Treaty as signed (*see* page 9).

† Article 11 in the Treaty as signed (*see* page 10).

## ORAL DECLARATION

*Minute of a Meeting held at the Antoniades Palace, Alexandria,  
on 10th August, 1936*

At a meeting at the Antoniades Palace on the morning of the 10th August, at which the provisions of the draft treaty relating to the Capitulations and other non-military clauses were under discussion, the following oral declaration was made:—

His Excellency Nahas Pacha, on behalf of the Egyptian Delegation, stated that the absence in the treaty documents of any mention of the Judicial and Financial Advisers meant that the Egyptian Government were free from any restriction of an international character with regard to the retention or non-retention of these officials.

His Excellency the High Commissioner expressed his agreement with the declaration of Nahas Pacha.

CONVENTION BETWEEN HIS MAJESTY'S GOVERNMENT IN THE  
UNITED KINGDOM AND THE EGYPTIAN GOVERNMENT  
CONCERNING THE IMMUNITIES AND PRIVILEGES TO BE  
ENJOYED BY THE BRITISH FORCES IN EGYPT.

*London, 26th August, 1936*

The Government of the United Kingdom of Great Britain and Northern Ireland and the Egyptian Government desiring, in accordance with Article 9 of the Treaty of Alliance signed this day, to settle the position as regards jurisdictional and fiscal matters of the Forces in Egypt of His Majesty the King of Great Britain, Ireland and the British Dominions beyond the Seas, Emperor of India (hereinafter referred to as His Majesty), have agreed as follows:—

1. In this Convention the expression "British Forces" includes—

(a) Every person subject to the Naval Discipline Act, the Army Act and the Air Force Act of the United Kingdom (or the corresponding Acts of other parts of His Majesty's dominions) who is stationed with, or attached to, the forces of His Majesty, who are present in Egypt in accordance with the provisions of the Treaty of Alliance;

(b) Every civilian official of British nationality accompanying or serving with the said forces in Egypt or the Navy, Army and Air Force Institutes, who is either granted relative status as an officer, or holds a pass designating his status,

issued by the Appropriate British Authority as hereinafter defined, and who is paid from the funds of any part of the dominions of His Majesty, or the Navy, Army and Air Force Institutes ;

(c) Wives, and children under 21 years of age, of the persons mentioned in para. (a) and (b) hereof.

2. (a) The expression " Appropriate British Authority " means—

(i) in the case of members of His Majesty's Naval Forces, the Senior Naval Officer for the time being within the territorial waters of Egypt ; or in cases where the matter is not within his cognizance, the Commander-in-Chief or other officer for the time being commanding the Mediterranean Station ;

(ii) In the case of members of His Majesty's Land Forces, the General or other Officer for the time being commanding the British Troops in Egypt ;

(iii) In the case of members of His Majesty's Air Forces, the Air or other Officer for the time being commanding the Royal Air Force in Egypt.

(b) Any authority given to, or any act or thing to be done by, to or for, any Appropriate British Authority may be exercised by, or done by, to or for, any other person for the time being authorised in that behalf according to the custom of the particular service of His Majesty concerned.

3. (a) The expression " British Camps " means—

the areas or places which, by virtue of Article 8 of the Treaty and the Annex thereto, have been allocated to the Forces of His Majesty and such other areas as may be so allocated by agreement of both Governments either in addition to or in substitution for the aforesaid areas, and including the temporary camps and bivouacs in the training and manœuvre areas authorised by the Treaty when being used as such.

(b) the expression " service aircraft " means any aircraft of His Majesty's Forces.

4. No member of the British Forces shall be subject to the criminal jurisdiction of the Courts of Egypt, nor to the civil jurisdiction of those Courts in any matter arising out of his official duties. If any civil proceeding is instituted against a member of the British Forces before any Egyptian Court, notification of the proceedings shall be given to His Majesty's Ambassador, and no further steps shall be taken until twenty-one days have elapsed from the date of notification. This period shall be extended if His Majesty's Ambassador states that it has not been possible to conclude the necessary investigations in the above time. A statement to the Court by His Majesty's Ambassador that the proceedings arise out of official duties will be considered as conclusive evidence of that fact.

5. Without prejudice to the fact that British camps are Egyptian territory, the said camps shall be inviolable and shall be subject to the exclusive control and authority of the Appropriate British Authorities.

6. In pursuance of the provisions of the Treaty of Alliance, the Egyptian Government hereby consents to the enjoyment by the British Forces of—

(a) Freedom of movement between British camps, and to or from the ordinary point of access to Egyptian territory by water, land or air ; there would of course be consultation with the Egyptian Authorities as regards movements of large bodies of men, stores or vehicles on railways and roads used for general traffic ;

(b) Unrestricted communication by radio or other telegraphy, telephony or any other means howsoever ; and the necessary facilities for maintaining such communications whether inside or outside of British camps, including the laying of cables and land lines ; it is understood that the telegraph and telephone cables and lines herein referred to will be situated in the areas where the British Forces are stationed, and that any connection with the Egyptian system of telegraphs and telephones will be subject to arrangement with the Egyptian Authorities ;

(c) The right within British camps to generate light and power for use in British camps, and to transmit and distribute such light and power between the place of generation and any other British camp by means of cables, pipes or in any other way whatsoever ;

(d) Transmission, subject to the payment of the usual charges, of telegrams and messages over the Egyptian State Telegraphs and Telephones, in clear, in code or in cypher ;

(e) Use of the Egyptian State Railways upon the terms and subject to the conditions now in force ;

(f) The supply, maintenance and use of telephones as required, as part of and connected with the Egyptian State Telephones service and system, at the rates and upon the conditions now in force ;

(g) Entry into and departure from Egypt of members of His Majesty's Forces at all times without let or hindrance, subject only to the production of a certificate showing membership of the British Forces in cases when such members do not arrive or leave by a British Man of War, Troopship, Freightship, or Service Aircraft, Service Transport, or as a formed body under command of an Officer, Warrant Officer, Non-Commissioned Officer, or Petty Officer ;

(h) The use of roads, bridges, canals, streams, lakes, waterways and other bodies of water, without the payment of dues, tolls or charges either by way of registration or otherwise for vehicles or water-borne craft used on His Majesty's Service ;

(i) Port facilities free of payment for His Majesty's Men of War, Troopships, Freightships, and Service Aircraft of an amphibian or seaplane character ;

(j) The same immunity regarding the official correspondence of the British Forces and their couriers as is enjoyed in International Law by the Diplomatic representatives of foreign States.

7. (a) Members of the British Forces who are owners of real property shall pay the same taxes, registration and transfer fees in respect of such property and its produce as civilians of British nationality ;

(b) Members of the British Forces shall pay in respect of any privately owned radio receiving or transmitting apparatus the tax or licence fee for the time being in force and applicable to such apparatus ;

(c) Members of the British Forces shall pay the fee for the time being in force for the registration of a private water-borne craft and (subject to the provisions of Article 6 (h) hereof) also all dues, charges and tolls leviable in consequence of the user of such craft ;

(d) Members of the British Forces shall pay the tax or registration fee for the time being in force for a private motor vehicle used on any public road maintained by the Egyptian Government or for any privately owned aircraft ;

(e) The Agreement between the Egyptian Government and the British Military Authorities dealing with imports and exports by the British Naval, Military and Air Force Authorities as well as with imports by individual members of His Majesty's Forces, and by the Navy, Army and Air Force Institutes, dated the 14th July, 1921, as amended up to the date hereof, shall remain in full force and effect ; provided, however, that, in the event of a change in the tariff, either party to the said Agreement shall have a right to demand a revision of the *ad valorem* rates which have been accepted by mutual consent as equivalent to the actual duties and dues chargeable under the tariff now in force. The principle of an *ad valorem* equivalent shall be maintained ;

Save as above provided, British camps, the British Forces and the members thereof shall be immune from all taxation, other than Municipal rates for services enjoyed, and from all registration fees or charges unless there has been an agreement between the two Governments to the contrary.

8. The Egyptian Government freely offers every assistance to British aircraft in distress, and will accord full facilities to His Majesty's personnel and stores to proceed to and from the salvage of any aircraft in distress that may have made a forced landing in Egyptian territory.

9. The Appropriate British Authority will surrender, on receipt of an application signed by the appropriate official of the Egyptian Ministry of Justice, persons not being members of His Majesty's Forces and who are within any British camp, and

(a) Against whom a warrant of arrest has been issued in respect of any offence triable by a court in Egypt; or

(b) Against whom an order of imprisonment has been made by any court in Egypt; or

(c) Against whom an order has been issued by an appropriate Egyptian military authority for desertion or absence without leave from the Egyptian army; and

(d) Who are not immediately ejected therefrom as would ordinarily be done in the case of such persons who take refuge therein from the Police.

Every application for the surrender of an offender, under these provisions, shall be accompanied by a certified true copy of the warrant of arrest or order of imprisonment as the case may be, and by such information as is available as to the identity and whereabouts of the person whose surrender is desired.

10. The Egyptian Government will ensure :—

(a) The searching for, apprehending and handing over of any members of the British Forces who are claimed as deserters or absentees without leave, upon request made in writing by the Appropriate British Authority;

(b) The prosecution of persons accused of acts in relation to the British Forces which, if committed in relation to the Egyptian Forces, would have rendered them liable to prosecution.

11. (1) Subject to the provisions of sub-paragraph (a) of the preceding Article, members of the British Forces shall be liable to arrest by the Egyptian Authorities only in such circumstances as would justify the arrest of civilians of British nationality. Should any member of the British Forces be arrested, the following procedure will be adopted :—

(a) Notification of the arrest, giving the name and other particulars of the person arrested, together with information as to the nature of the offences for which the said person was arrested, will be sent forthwith to the Appropriate British Authority;

(b) A similar notification will also immediately be sent to the office of the nearest British Consular Officer;

(c) The alleged offender will be handed over on demand to the Appropriate British Authority;

(d) Full particulars of the charges against the alleged offender, together with the names, addresses and statements of the relevant witnesses, will be delivered or sent by registered post to the Appropriate British Authority within 48 hours of the arrest;

(2) When it is alleged that a member of the British Forces has committed an offence for which he has not been arrested, particulars of such alleged offence together with the *procès-verbal* will be sent with all convenient speed to the Appropriate British Authority.

12. The British Forces will send an armed escort into any part of Egypt for the purpose of taking over and escorting to a British camp, any member of the British Forces arrested under the provisions of Articles 10 and 11 hereof.

13. (a) The Egyptian Government undertakes at the request of the Appropriate British Authority to take all reasonable steps to secure the attendance of persons amenable to its jurisdiction as witnesses before His Majesty's military tribunals in Egypt (courts-martial, courts of inquiry, committees of adjustment, and boards of officers or other Service tribunals) convened and assembled by the Appropriate British Authority.

(b) The Government of the United Kingdom undertakes to take all reasonable steps to secure the attendance of any member of the British Forces as a witness at any proceedings before the Egyptian Courts, including the Mixed Courts, courts-martial, disciplinary tribunals or courts of inquiry, upon application being made to the Appropriate British Authority signed by the appropriate official of the Ministry of Justice or the President of the Tribunal concerned.

14. The Egyptian Government and the Government of the United Kingdom agree that it is desirable that any person, ordered to attend a British military tribunal under Article 13 (a) above and who is accused of any of the following offences, should be amenable to prosecution before the appropriate Egyptian Court, that is to say :—

- (i) Being duly summoned makes default in attending ; or
- (ii) Refuses to take oath or make a solemn declaration legally required to be taken or made ; or
- (iii) Refuses to produce any document in his power or control legally required to be produced by him ; or
- (iv) Refuses when a witness to answer any question to which the tribunal may legally require an answer ; or
- (v) Is guilty of contempt of the tribunal by using insulting or threatening language or by causing interruption or disturbance in the proceedings of such tribunal ; or
- (vi) When examined on oath or solemn declaration before the tribunal wilfully gives false evidence.

Similarly it is desirable that a person ordered to attend an Egyptian tribunal under Article 13 (b) above, who commits any of the offences specified above, shall be amenable to prosecution before the appropriate British military tribunal.

The exact manner and the extent, however, to which effect can be given to the two preceding paragraphs of this article depends upon the laws of the United Kingdom and of Egypt respectively, and the two Governments agree that there shall be further discussion at a later date in regard to this matter.

15. Each Government shall pay to the other on demand all reasonable expenses incurred in execution of the provisions of Articles 8, 9, 10 (a), 13 (a) and 13 (b) hereof.

16. The privileges and immunities provided for in the present Convention only apply to persons stationed with or attached to those forces of His Majesty who are present in Egypt in accordance with the provisions of the Treaty of Alliance and as further defined in Article 1 above.

As regards military and air force personnel, the limitations as to numbers provided for in the said Treaty (without prejudice to the provisions of Article 7 thereof) apply.

In witness whereof the undersigned Plenipotentiaries being duly authorised to this effect by their respective Governments have signed the present agreement and affixed thereto their seals.

Done at London in duplicate this 26th day of August, 1936.

For the Government of the United Kingdom of Great Britain and Northern Ireland :

(L.S.) ANTHONY EDEN.

For the Egyptian Government :

(L.S.) MOUSTAPHA EL-NAHAS.

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